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ENVIRONMENTAL ANALYSIS FOR THE SEELEY LAKE SALVAGE II TIMBER SALE

NOVEMBER 2002

Montana Department of Natural Resources & Conservation
Clearwater State Forest

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FINDING

SEELEY LAKE SALVAGE II TIMBER SALE

An Environmental Analysis (EA) has been completed for the proposed Department of Natural Resources and Conservation (DNRC) Seeley Lake Salvage II Timber Sale. After a thorough review of the EA, project file, public correspondence, Department policies, and the State Forest Land Management Plan (SFLMP), I have made the following 3 decisions:

1. ALTERNATIVE SELECTED

Two alternatives are presented and were fully analyzed in the EA: the No-Action Alternative, which includes existing activities, but does not include a timber sale (EA, page 3); The proposed action, which proposes harvesting approximately 2.9 million board feet of timber from 421 acres via ground skidding (EA, page 2 & 3).

For the following reasons, I have selected the proposed action without additional modifications:

- a. In my opinion, the proposed action best meets the purpose and need for action and the specific project objectives listed in the EA on page 1. The proposed action generates more return to the school trust than the no action alternative. The environmental effects of the proposed action are acceptable as compared with the no action alternative. No major losses in habitat, or unacceptable effects to water or soil would occur under the proposed action.
- b. The analysis of identified issues did not reveal information compelling the DNRC not to implement the proposed action.
- c. The proposed action includes activities to address environmental concerns expressed by DNRC staff and the public. For example, it includes improvements to the roads in the project area to meet Best Management Practices (BMPs) (EA, pages 4 & 5); and improves timber stand health and productivity where harvesting is proposed (EA, pages 5 & 6).

2. SIGNIFICANCE OF IMPACTS

For the following reasons, I find that the proposed action would not have significant impacts on the human environment:

a. Wildlife

The project and analysis areas contain no key winter ranges for big game. Individual deer and elk likely use the project and analysis area year-round. With the mitigations in place, little direct, indirect or cumulative effects to big game populations would be expected with the proposed action (EA, Attachment #5, page 22 & 23). Neither individual effects nor total effects to big game habitat are below accepted thresholds for this area.

This alternative would retain existing snags unless they pose an unacceptable safety hazard during logging operations. Lodgepole pine is not a preferred snag species for most wildlife. There would be little change to snag-nesting habitat used by most potential snag-users in the project or analysis areas from the proposed action.

The project area is adjacent to the Northern Continental Divide Ecosystem Grizzly Bear Recovery Area (NCDE). It is surrounded by Bear Management Units (BMU) #19(Mor-Dun), #20(Swan), & #22(Mission), and is within the draft Northwest Montana Wolf Recovery Area. Habitats would be improved for some species and reduced for others. However, none of the estimated changes are identified to be extensive, severe, or of a duration that would cause unacceptable impacts to threatened, & endangered or sensitive species. Mitigations included in the EA would further reduce impacts (EA, Attachment #5, pages 3-24).

b. Economics

This alternative would provide the largest measure of reasonable and legitimate return over the long run for the Common School (C.S.), and the Agricultural College (A.C.B.) Trust Grants on this entry, at approximately \$500,000 to \$750,000, (EA, page 9). In the long run, with a well-designed and maintained access/transportation route, this would provide for future entries at reduced development costs and thus higher stumpage values.

c. Water Quality, Fisheries, and Soils

No increases in sediment yields are expected to result from the proposed action. The existing road segments planned for use were evaluated and determined to be low risk to water quality and cumulative watershed impacts. All salvage harvest would be conducted in the winter under frozen and snow covered conditions. BMPs would be fully implemented during salvage harvest operations. All stream channels including the Clearwater River are well buffered from the proposed harvest areas. No harvests are planned within the SMZ for the Clearwater River or Morrell Creek (EA, Attachment #4, pages 2 & 3).

No direct, indirect or cumulative impact to cold-water fish habitat is expected to result from the proposed action alternative. All SMZ widths would comply with the Montana Streamside Management Zone Law and Rules, and all applicable Watershed and Fisheries Resource Management Standards outlined in the State Forest Land Management Plan (EA, Attachment #4, page 4).

There is low risk of substantial impacts to long-term soil productivity associated with the proposed action. The proposed harvest units are located on gentle to moderate slopes in areas with soils that have low to moderate erosion potential. All of the proposed harvest operations would be limited to winter season (frozen and/or snow covered conditions). Streams, draws and wet sites would utilize equipment restriction zones. Erosion at landings would be controlled by proper location, appropriate size and standard BMP's (EA, Attachment #4, page 6 & 7).

d. Timber and Site Productivity

Logging would be completed during winter conditions. The proposed silvicultural treatments (EA, pages 5 & 6) are conventional techniques that have been previously applied in other projects and have resulted in acceptable environmental changes. The increase in stand vigor, resistance to insects or diseases, and retention of a good gene pool for a future seed source would not only maintain, but likely improve, options for future timber management and thus revenue. No unique features would be impacted by proposed activities.

e. Precedent Setting and Cumulative Impacts

The proposed timber sale is similar to past projects that have occurred in the area. Since the EA does not identify future actions that are new or unusual, the proposed timber sale is not setting a precedent for a future action with significant impacts.

Taken individually and cumulatively, the identified impacts of the proposed timber sale are within threshold limits. Proposed timber sale activities are common practices and none of the project activities would be conducted on important fragile or unique sites.

The proposed timber sale conforms with the management philosophy adopted by the DNRC in the SFLMP and is in compliance with existing laws, policies, guidelines, and standards applicable to this type of proposed action.

3. SHOULD DNRC PREPARE AN ENVIRONMENTAL IMPACT STATEMENT (EIS)?

Based on the following, I find that an EIS does not need to be prepared:

- a. The EA adequately addressed the issues identified during project development and displayed the information needed to make the decisions.
- b. Evaluation of the potential impacts of the proposed timber sale indicates that no significant impacts would occur.
- c. Sufficient opportunities for DNRC staff and public review and comment during project development and analysis were provided. DNRC staff and public concerns were incorporated into project design and analysis of impacts.

Jon M. Hayes



Area Silviculturist
Southwestern Land Office
December 13, 2002

Environmental Assessment

Introduction and Overview

Project Name: Seeley Lake Salvage II Timber Sale

Proposed Implementation Date: Winter 2003-04

Location: Sections 4, 9, 15, T16N, R15W, Missoula County, Section 36, T17N, R15W, Powell County (see "Vicinity Map" figure #1).

Type and Purpose of Action

Parts of the Seeley Lake area are currently experiencing an outbreak of mountain pine beetle (*Dendroctonus ponderosae* Hopkins). This forest pest can be very destructive and can reach epidemic levels if the right combination of food supply, weather conditions and population dynamics come together as we are seeing in the Seeley area. In response to this event, the Department of Natural Resources & Conservation (DNRC) as manager of the Clearwater State Forest proposes a forest management project that would salvage beetle killed trees, remove high risk live trees and facilitate the conversion of mature lodgepole pine stands to a mixed species stand where its appropriate. In addition, this proposal will also reduce the overall fuel loading in and around cabins and residences. This in turn will reduce the risk of a catastrophic fire in these areas and make controlling wildfire safer and less costly.

The lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary institutions such as public schools & state colleges (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and Department of Natural Resources and Conservation (DNRC) are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 77-1-202, MCA).

In 1996, the DNRC adopted the State Forest Land Management Plan (SFLMP) under an Environmental Impact Statement Record of Decision and subsequent approval by the Board of Land Commissioners. The SFLMP outlines the management philosophy for forested State trust lands. This project is conceived and proposed in accordance with the direction provided by the State Forest Land Management Plan.

The objectives of the project are:

- 1) To maintain a healthy forest;
- 2) Capture timber values, and
- 3) Reduce overall fuel loadings in and around cabin sites and residences of Seeley Lake

This project has three distinct components.

- Salvage beetle killed timber and harvest live high risk timber in affected areas

- Reduce fuels
- Reforest area with a suitable mixture of tree species

I. Project Development

1. Public Involvement, Agencies, Groups or Individuals Contacted.

Public involvement has been solicited through a combination of newspaper ads, notices mailed to known interested parties, and personal contacts (*see "Public Scoping Notice" in Attachment # 1*).

DNRC program officers, specialists, and others consulted in the development of the project are listed in attachment # 2.

Public interest has been mainly by those most directly effected and local community entities. Direct involvement has been minimal, probably due to the localized nature of the current beetle outbreak. The department has attempted to use an open and interactive approach, encouraging continuous public comment through all stages of the project development and implementation. There has been an attempt to respond appropriately to all requests for information. Throughout, the department has strived to frame the project in a clear context of the trustland forestry program, and in direct relation to the State Forest Land Management Plan through which the program is implemented. Within this framework, the department has used public advice, concerns, and ideas to plan the project and modify it as warranted; to develop and reiterate project designs, mitigations, and controls; and, to analyze and disclose the project's environmental impacts.

2. Other Governmental Agencies with Jurisdiction—Permits Needed

USFS, temporary road use permit on Morrell Ck road.

3. Alternatives Considered

PROPOSED ACTION

This project has been developed as a single proposed action, in which any potentially significant issues with members of the public, private organizations, and other units of government have been proactively managed, negotiated, and resolved to the extent possible during project development.

The three components of the proposed action are:

- Salvage beetle killed timber and harvest live high risk timber in affected areas
- Reduce fuels
- Reforest area with a suitable mixture of tree species

Salvage Beetle Killed Timber And Harvest Live High Risk Timber In Affected Areas

All beetle- killed and live lodgepole pine trees that meet the minimum size requirements (16' log with 5.5" top diameter) would be cut. All other tree species would not be harvested. The mountain pine beetle has been very specific to the lodgepole pine in this area and by removing the trees with current broods and the adjacent food supply, this outbreak can be greatly reduced.

The total estimated volume of dead timber is currently believed to be 500,000 board feet and would be removed from approximately 421 acres.

The total estimated volume of live lodgepole pine to be harvested is currently believed to be 2,400,000 board feet and would be coming off the same 421 acres. All harvesting activities and log skidding would be done with ground based equipment.

No new roads would need to be built to accommodate this harvest. However, reconstruction of some existing roads is anticipated. This will include a culvert installation, ditching, rolling dips, fabric and gravel in some low areas.

Two existing roads would be closed (gated) to reduce road maintenance costs and provide additional wildlife security.

Reduce Fuels

The stands that have been targeted for harvest all have a history of large stand replacing fires. Most of the Seeley Valley is made up of these kinds of stands and it's only been the last 100 years or so that the suppression of wildfires has contributed to the rapid build up of fuels in this valley. Add to this the growth of homes, second homes, and cabin sites in the valley and the mixture can be lethal.

The net result of this harvest will be an overall reduction in available fuel for wildfire, with a return to a more historic stand structure. Timber would be skidded tree length and slash would be burned when conditions are safe to do so.

Reforest The Area With A Suitable Mixture of tree Species

Reforestation needs would be assessed upon completion of the harvest. It is anticipated that western larch would need to be planted to ensure a mixture of species would occur in the new forest that would be created.

Some of the area would retain a heavy overstory of western larch and other more shade tolerant species. In these areas no planting would be required. However, some areas would not have as much overstory and planting will be needed to achieve the targeted species mix, of 60% western larch, 30% lodgepole pine and 10% other species.

NO ACTION

The potential impacts evaluated under the "no action" alternative include the continuing decline of the lodgepole pine in these stands. Eventually, the Mountain Pine beetle would kill 70%-90% of the lodgepole pine in these stands. The dead timber that remains would add to the fuel loading for a future wildfire.

In relation to timber harvest, "no action" has been considered in individual resource analyses to compare the environmental implications of the proposed salvage work with the expected effects of no management. This is useful as means of discovering which designs, mitigations, and controls can be incorporated in the proposed action to best serve all environmental goals in combination, while still achieving the objectives of the project.

II. Impacts on the Physical Environment

4. Geology and Soil Quality, Stability and Moisture

The primary risks to long-term soil productivity are erosion, rutting, compaction and displacement of surface soils by harvest and skidding equipment operations.

Direct and cumulative impacts of the proposed timber-salvage work on soils would be avoided or minimized through project controls and mitigations. These include:

Harvest Schedule: Harvest would be occurring during winter months. No new road construction would be necessary.

Skidding Limitations: Ground-based logging systems (tractor, skidders, and mechanical harvesters) would be limited to slopes less than 35%.

Skid Trail Planning: The logger and sale administrator would agree to a skidding plan prior to equipment operations. Skid trail planning would identify which main trails to use, and what additional trails or mitigation may be needed. Trail locations that do not comply with forestry Best Management Practices would not be used and may be closed with additional drainage installed where needed or grass seeded to stabilize the site and control erosion. Additional requirements include:

1) Skid trails would be located at least 75 feet apart.

Down Woody Material: Currently a variety of conditions exist as a result of accumulation of blow down and insect mortality. Because one of the objectives is to reduce overall fuel loadings in and around Seeley lake all logging will be tree length and slash will be disposed of on the landings.

Season of Use/ Soil Compaction Restrictions: In order to prevent soil resource impacts, logging and hauling activities would be restricted on sensitive soils to periods when both of the following conditions occur, unless otherwise approved in writing by the Forest Officer.

- a. Minimum frost depth of 3 inches.
- b. Minimum of 16 inches loose snow or 8 inches packed snow adequate to avoid soil displacement

Roads: Install and maintain adequate road drainage to control erosion and comply with forestry Best Management Practices. Plan, design and improve existing road systems to meet long-term access needs and to fully comply with BMPs.

(See also "Watershed, Fisheries, Weeds and Soils Report" in Attachment # 4.)

5. Water Quality, Quantity and Distribution

Protecting the Clearwater River, Morrell Creek and riparian areas from undue sedimentation are important concerns. The entire project area and harvest plan have been reviewed by a DNRC hydrology specialist, and recommendations to minimize impacts or improve existing conditions have been incorporated into project designs, mitigations, and controls. These include:

- Implement Forestry BMPs and the SMZ law as the minimum standard for all operations associated with the proposed timber sale. Plan, design and improve existing road systems to meet long-term access needs and to fully comply with BMPs.
- Provide for adequate road surface drainage on all temporary or abandoned roads that would not require periodic maintenance.
- Protect ephemeral draws and springs with marked equipment restriction zones. If absolutely necessary, designate locations for skid trail crossings. Use designated crossings only under dry or frozen conditions.

As a consequence of these mitigations and controls, no appreciable direct or indirect impacts to water quality, cold-water fisheries, or downstream beneficial uses are anticipated as a result of the proposed action.

No adverse cumulative watershed effects are expected to result from the proposed action.

(See also "Watershed, Fisheries, Weeds and Soils Report" in attachment # 4.)

6. Air Quality

Federal, state and local agencies enforce rules for open controlled burning. Air quality is analyzed by estimating emissions from prescribed burns and determining where project-related activities would create dust on roads. The air quality analysis area includes all of Missoula County and is located in Montana Airshed 3B. The Montana Airshed Group is responsible for determining both airshed number and impact zones. The project area is not located in any of the impact zones.

The "no action" alternative would not create impacts to air quality beyond existing levels. Wildfire smoke would still be possible. Over the long term, road dust during summer months would increase as recreational traffic increases.

The post-harvest burning of logging debris would produce particulate matter. All burning would be conducted during times of adequate ventilation and within existing rules and regulations.

Cumulative effects to air quality would not exceed the levels defined by the State of Montana Cooperative Smoke Management Plan (1988) and managed by the Montana Airshed Group. Prescribed burning on small private lands as well as USFS lands would have potential to affect air quality. The USFS currently operates under the same Airshed Group guidelines as the State and would burn only on approved burn days.

7. Vegetation Cover, Quantity and Quality

All green lodgepole pine, both live and dead, meeting merchantable requirements, (16' log to a 5.5" top) would be removed from targeted stands. This would include cutting units 4-1, 9-1, 9-2, 15-1, & 36-1 (see map). In unit 4-1 the residual stand would retain approximately 20,000 BF/acre of Western Larch, and other species. DNRC would be removing approximately 5,000 BF/acre of dead and live lodgepole pine. This would create a more open stand but would still retain a closed canopy in some parts of the stand where other species are more prevalent.

In units 9-1, 9-2, 15-1, & 36-1, less residual stand exists and a more open appearance would result from the removal of the lodgepole pine. These stands have approximately 3,000-10,000 BF/acre of lodgepole pine but only carry approximately 5,000 BF/acre of other species. No old growth timber will be harvested in this timber sale. The near and long-term implications of the proposed treatments for forest and landscape biodiversity are largely beneficial. The proposed action would not produce adverse impacts, direct or cumulative, on forest vegetation. Ground disturbance from the proposed salvage operations has the potential to introduce or spread noxious weeds in susceptible habitat types. The objective for weed management is to prevent new establishment of noxious weeds, and implement all feasible controls on established populations to slow their spread. An Integrated Weed Management (IWM) approach would be implemented that would include:

- Harvest operations would only occur during winter. This would greatly reduce the chance of establishing weeds in areas that are entered. All harvest equipment would be cleaned of plant parts, mud and weed seed to prevent the introduction of noxious weeds. Equipment will be subject to inspection by forest officer prior to moving on-site.
- Promptly seed soils disturbed during road reconstruction. This includes seeding cut/fill slopes with site-adapted grasses to reduce weed encroachment and help stabilize roads from erosion.
- Weed treatment measures include herbicide applications along portions of project roads and accessible sites with a priority on spot outbreaks of noxious weeds and as designated by the Forest officer. Any herbicide treatments would be implemented by a certified applicator according to herbicide label directions in accordance with applicable laws and rules of the Missoula County Weed Board. No herbicides would be applied where runoff could affect surface waters.
- DNRC would monitor the project area disturbed sites for new noxious weeds and develop plans as needed to address weed problems. If new infestations of noxious weeds are noted, a weed management plan will be developed and implemented.

Rare plants or cover types listed by the Montana Natural Heritage Program have not been found on the project area.

(For more detailed silvicultural prescriptions of each unit, *see Attachment #7.*)

8. Terrestrial, Avian and Aquatic Life Habitats

Big game species, especially deer and elk, are common residents or users of the project area. The removal of lodgepole pine will result in a net decrease in thermal cover. However, it could result in preventing the bark beetle infestation from spreading to an even larger area and resulting in greater impacts on thermal cover.

There are two fish bearing streams located in the proposed project area, the Clearwater River and Morrell Creek. There is no harvest units located immediately adjacent to the two bodies of water, and no direct, indirect or cumulative impacts to cold water fisheries habitat are expected by this proposed action. (See *Cold Water Fisheries- Attachment #4.*)

Sensitive Species: Some of these species occur in the proposed sale area and some don't. See the individual discussion for more details.

(For more on wildlife related issues: See "Wildlife Analysis" Attachment #5.)

9. Unique, Endangered, Fragile or Limited Environmental Resources

There is very little potential for the project to cause adverse impacts on species listed as threatened or endangered under the federal Endangered Species Act.

Bald Eagles: The harvest plan calls for only selective harvest of lodgepole pine. Large diameter trees for roosting and foraging, such as Ponderosa pine, western larch, Douglas-fir, and Englemann spruce, will not be removed. Habitat attributes important for nesting and foraging eagles would not be altered appreciably.

Grizzly Bear: Grizzly bear use of habitats near human habitations would be deterred through habitat alterations. Direct disturbance would be minimized through seasonal restrictions on harvest activities and open road densities within the project area would be reduced by closing existing roads.

Gray Wolf: No known wolf den sites occur within the project or cumulative affects analysis area, and therefore, there would be no expected direct effects on denning wolves.

Lynx: The project area is located near cabin sites, campgrounds, the town of Seeley lake, and state highway 83. Because of these high disturbance levels, this area is probably not an area of intensive lynx use.

(See also "Wildlife Analysis" Attachment #5.)

10. Historical and Archeological Sites

A map of the proposed harvest areas was sent to a DNRC archeologist. Many of these areas are the same areas that had been inspected in September 2001, for the Seeley Salvage timber sale. There are no recorded cultural-resource sites on State School Trust Lands within the Seeley Lake area.

(See also "Archeology" in Attachment # 3.)

11. Aesthetics

Because of the proximity of these stands to the Seeley lake area and because of the access by county roads, mainly people traveling these roads would see this harvest. The harvest areas are relatively flat and would be hard to see from a distance of more than ¼ mile.

12. Demands on Environmental Resources of Land, Water, Air or Energy

The biological events that are compelling a departmental response for the Seeley Salvage similarly affect a larger contiguous area comprising national forest and private land in the Seeley area. The proposed action has been developed in cooperation with the U.S. Forest Service—Lolo National Forest, and in direct communication with adjacent private landowners. All discussions in this EA concerning resources, potential impacts, and mitigation are made with awareness of adjacent and nearby lands.

13. Other Environmental Documents Pertinent to the Area

Chain of lakes Timber sale: This USFS project has not been completed and lies primarily north of the proposed State Harvest area.

Quiet Stems Timber Sale: This DNRC project has not been completed and lies approximately 6 miles south of the project area.

Clearwater River Timber Sales 1 & 2: These DNRC projects have not been completed and lie approximately 10-12 miles south of the project area.

Seeley Salvage Timber Sale: This DNRC has not been completed and lies in and around the Seeley Savage II proposed sale.

III. Impacts on the Human Population

14. Human Health and Safety

Log truck traffic would increase slightly on area roads for the duration of the proposed action. Signs at appropriate locations would be used to warn motorists and homeowners.

15. Industrial, Commercial and Agricultural Activities and Production

The proposed action would lead to a temporary increase in industrial activity that is related to logging, log hauling, and tree planting.

16. Quantity and Distribution of Employment

The proposed action may create a few seasonal jobs in the local area.

17. Local and State Tax Base and Revenues

The proposed action has only indirect, limited implications for tax collections.

18. Demand for Government Services

The impact on government services should be minimal due to the temporary nature of the proposed action.

19. Locally Adopted Environmental Plans and Goals

In June 1996, DNRC began a phased-in implementation of the State Forest Land Management Plan (SFLMP). The SFLMP established the agency's philosophy for the management of forested trust lands. The management direction provided in the SFLMP comprises the framework within which specific project planning and activities take place. The SFLMP philosophy and appropriate resource management standards are incorporated in the design of the proposed action.

20. Access to and Quality of Recreational and Wilderness Activities

The project area receives use by general forest recreationists. Recreation opportunities would continue under the proposed action

The old road that runs behind the cabinsites on Boy Scout Rd. in section 4 is used as a hiking trail and this road would remain open to hiking after the sale is completed.

21. Density and Distribution of Population and Housing

The proposed project has no direct implications for density and distribution of population and housing.

22. Social Structures and Mores

The proposed action has no direct implications for social structures and mores.

23. Cultural Uniqueness and Diversity

The proposed action has no direct implications for cultural uniqueness and diversity.

24. Other Appropriate Social and Economic Circumstances

Primary costs and benefits of the proposed action may be summarized as follows:

Road work

This would be done to existing roads and consists of surface drainage, culvert installation, fabric & gravel and blading.

Two gates would be installed on existing roads.

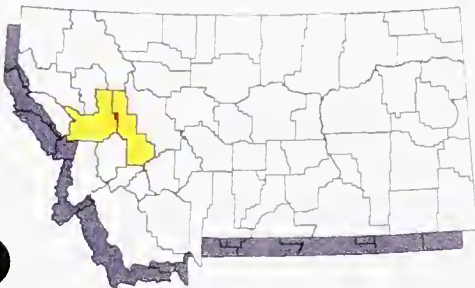
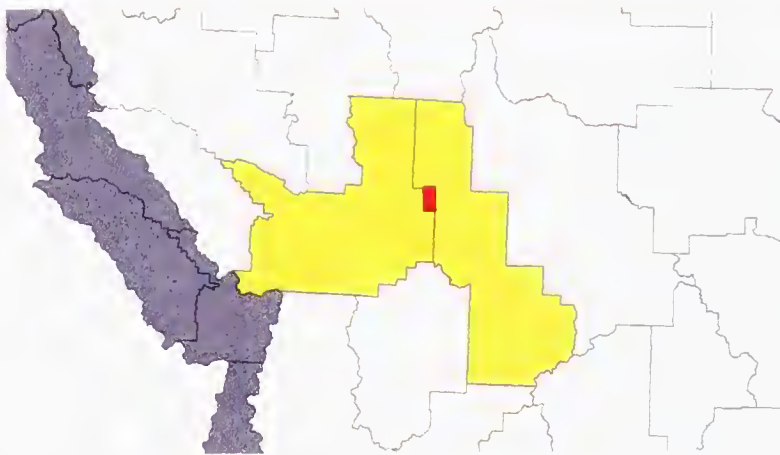
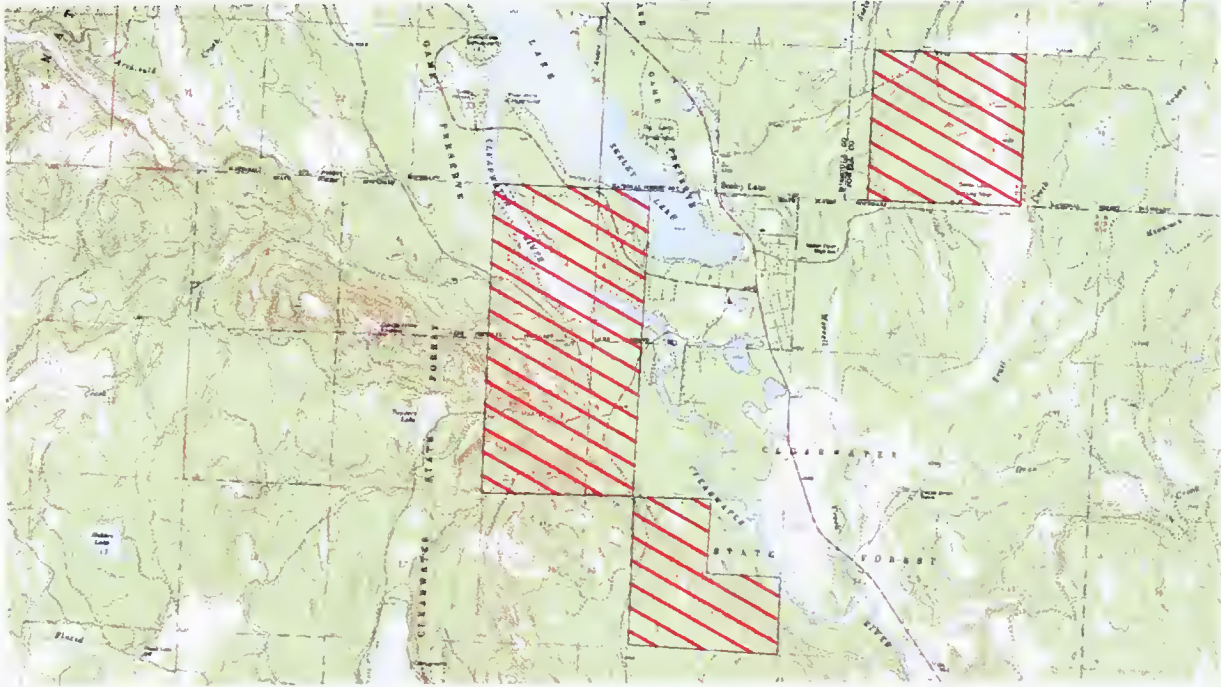
Reforestation

Presently planned reforestation work is expected to cost \$25,000.

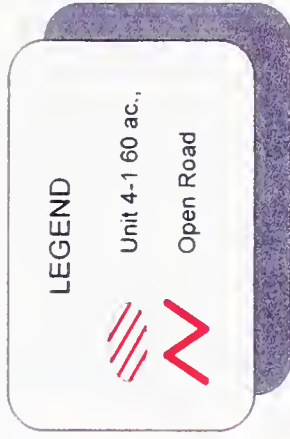
Timber Salvage

Timber salvage is expected to generate net proceeds to trusts ("stumpage") of \$500,000 to \$750,000

Seeley Salvage II T.S. Vicinity Map

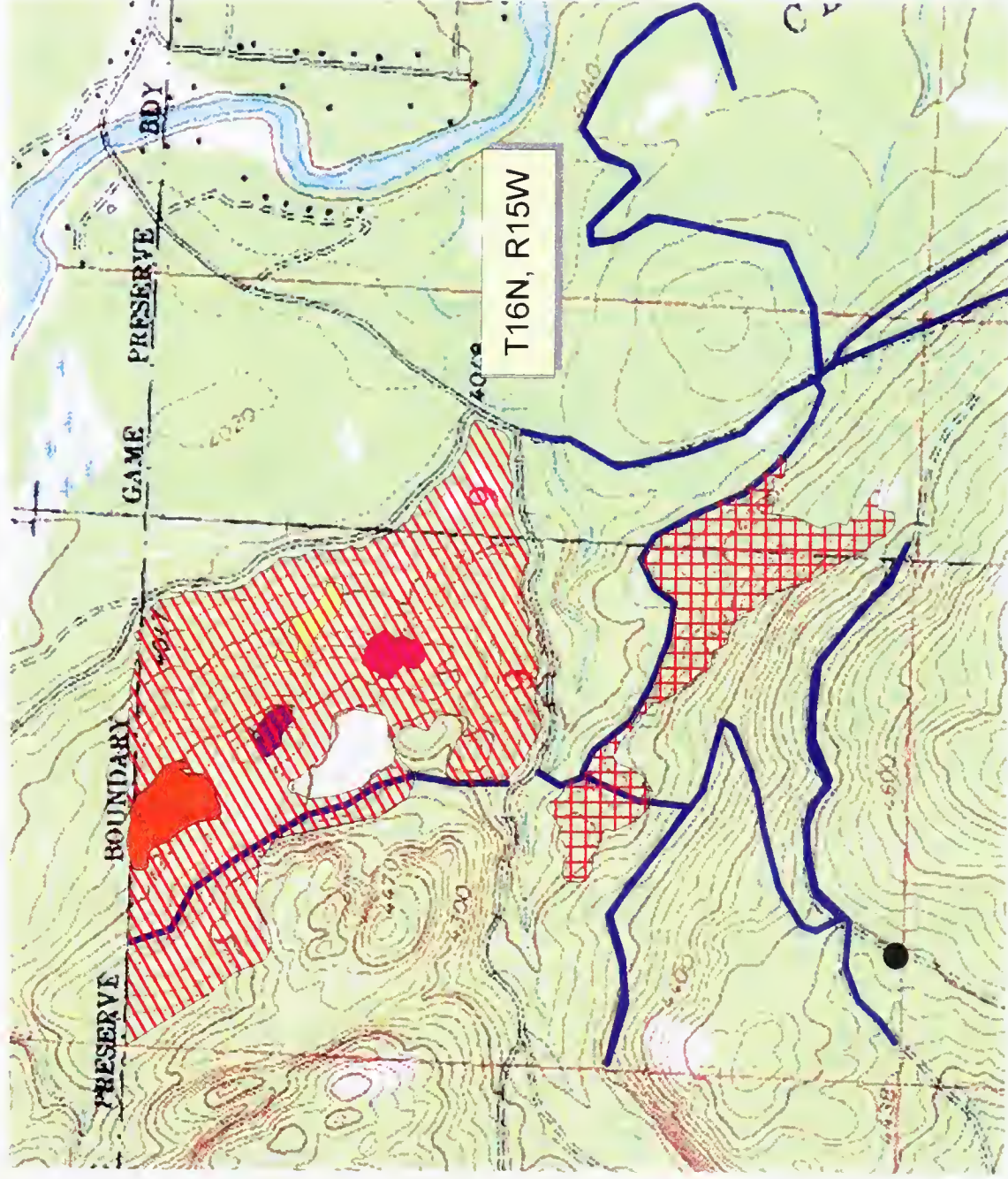


Section 4



Seeley Salvage II

Section 9



LEGEND

Unit 9-1 = 120 ac.

Unit 9-2 = 34 ac.

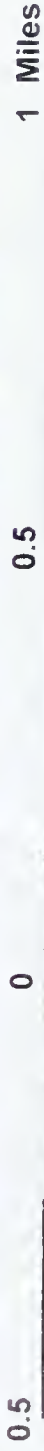
Bear safety area 1 = 2 ac.

Bear safety area 2 = 1 ac.

Bear safety area 3 = 6 ac.

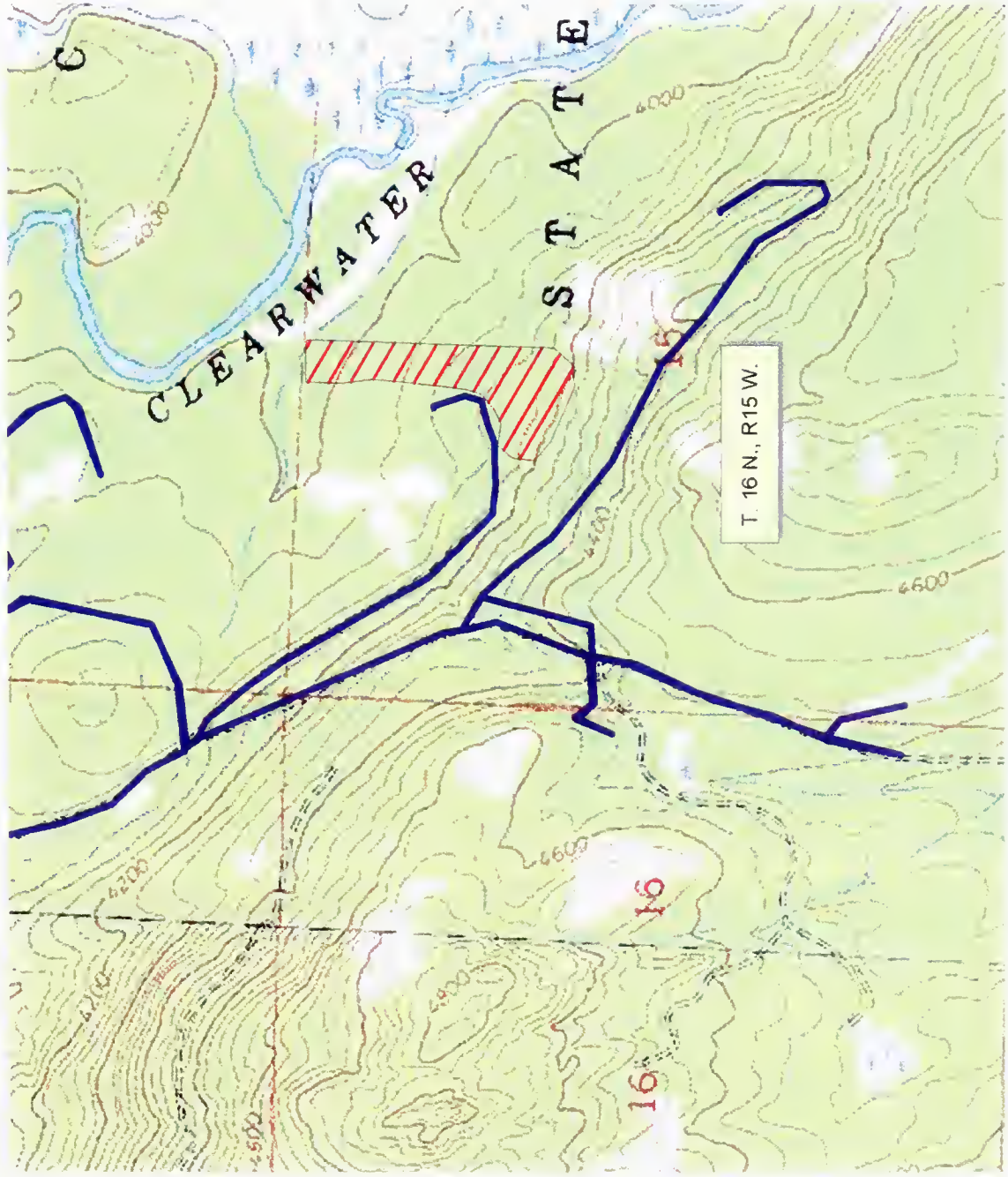
Bear safety area 4 = 2 ac.

Closed Road



Seeley Salvage II

Section 15



LEGEND

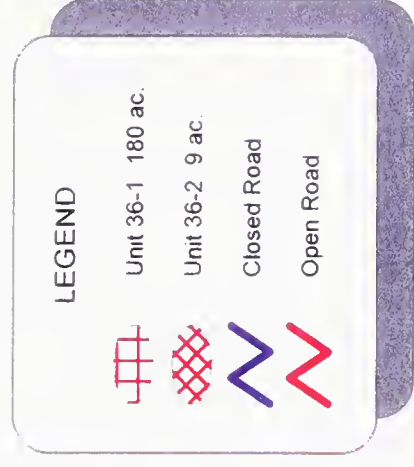
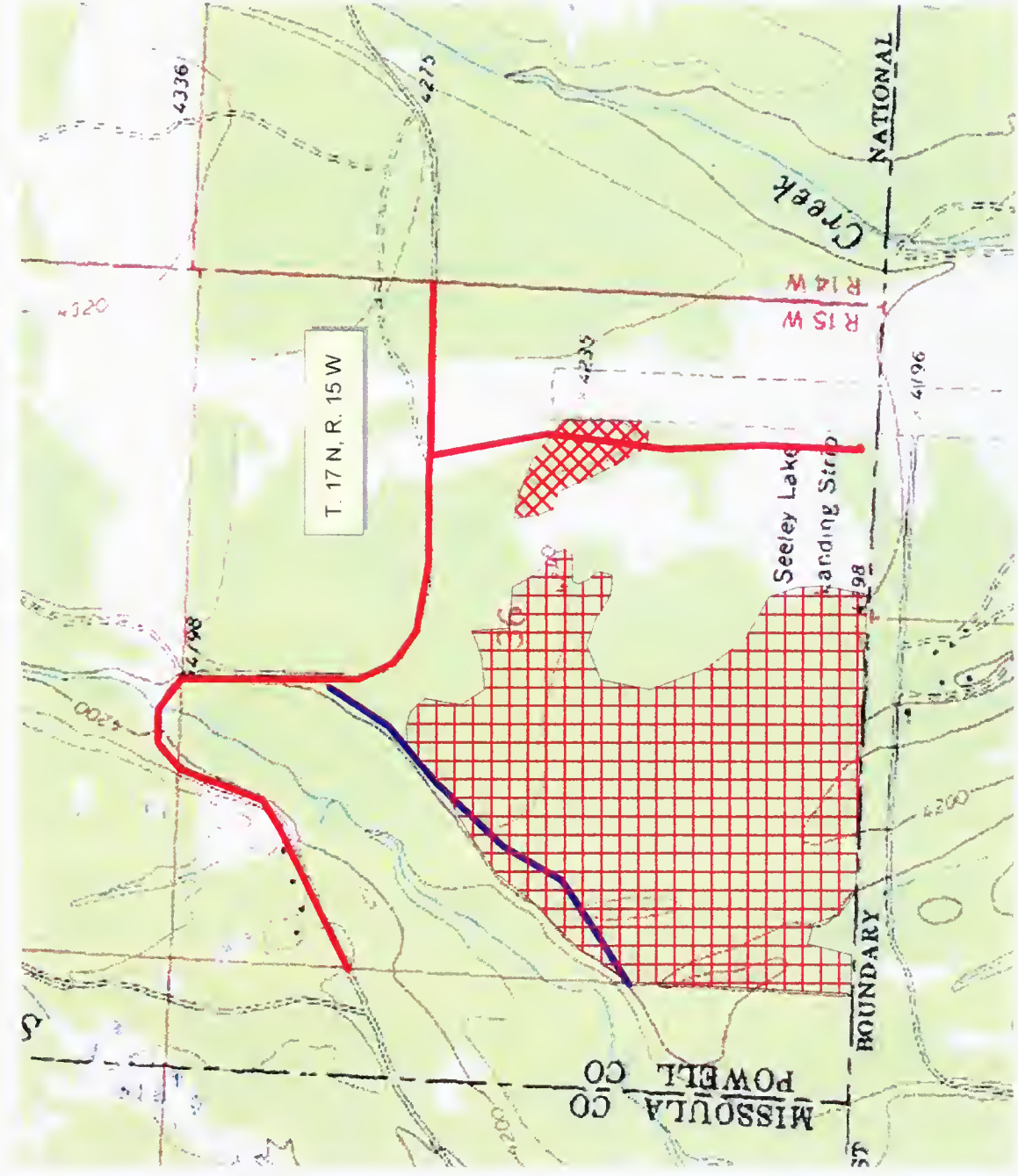
Unit 15-1 18 ac.

Closed Road



Seeley Salvage II

Section 36



– Attachments –
Environmental Assessment
Seeley Salvage II Timber Sale

Attachment 1 – Public Scoping Notice

Attachment 2 – Consultation List

Attachment 3 – Archaeology Report

Attachment 4 – Watershed, Fisheries, Weeds and Soils Report

Attachment 5 – Wildlife Analysis

Attachment 6 – Insect & Disease Report

Attachment 7 – Silvicultural Prescriptions

January 30,2002

INITIAL PROPOSAL
SEELEY SALVAGE #2 TIMBER SALE

The Montana Department of Natural Resources and Conservation, Clearwater Unit, is proposing a timber sale within the following sections: 4, 9, 15, T16N R15W and section 36, T17N R15W.

The primary objective is to capture as much value as possible of high risk Lodgepole pine before it succumbs to further pine beetle attack. An outbreak of Mt Pine Beetle (*Dendroctonus Ponderosae*) is occurring in parts of the Seeley Lake area and much of DNRC's land is susceptible to this forest pest. Our secondary objective is to maintain a healthy forest and reduce overall fuel loadings adjacent to homes and cabin sites in a continuing effort to reduce the risk of catastrophic fire in the Seeley Lake area.

Most if not all Lodgepole pine would be removed from targeted stands. Selective harvesting, leaving Ponderosa Pine, Western Larch, Douglas Fir, and Englemann Spruce would be the primary harvest method employed.

The total volume to be harvested is approximately 2.0 – 3.0 million board feet. It is anticipated that no new roads would be required and that approximately 2-3 miles of existing road would be reconstructed. The proposed action would be implemented in the winter of 2002/03 and 2003/04.

This area is known habitat for whitetailed deer, and numerous species of birds.

In preparation for the timber sale, resource specialists such as wildlife biologists, hydrologists, soil scientists and archaeologists, as well as neighboring landowners will be consulted.

The Department of Natural Resources and Conservation invites comments and suggestions concerning this proposal from all interested parties. Please respond by March 30, 2002.

Stephen J. Wallace
Unit Manager
(406) 244-5857 / swallace@state.mt.us

Individuals Consulted In Preparation of This Environmental Assessment

Ross Baty	Wildlife Biologist, Forest Management Bureau, Department of Natural Resources and Conservation, Missoula, Montana.
Kevin Chappell	Chief, Agriculture & Grazing Management Bureau, Department of Natural Resources and Conservation, Helena, Montana.
Jeff Collins	Soil Scientist, Forest Management Bureau, Department of Natural Resources and Conservation, Missoula, Montana.
Gary Frank	Supervisor, Resource Management, Forest Management Bureau, Montana Department of Natural Resources and Conservation, Missoula, Montana.
Kurt Gelderman	Special Uses Development Coordinator, Southwestern Land Office, Department of Natural Resources and Conservation, Missoula, Montana.
Renee Hanna	Hydrologist, Southwestern Land Office, Department of Natural Resources and Conservation, Missoula, Montana.
Jon Hayes	Area Silviculturist, Southwestern Land Office, Department of Natural Resources and Conservation, Missoula, Montana.
Steve Kohler	Entomologist, Service Forestry Bureau, Department of Natural Resources and Conservation, Missoula, Montana.
Tony Liane	Area Manager, Southwestern Land Office, Department of Natural Resources and Conservation, Missoula, Montana.
Brian Long	Supervisor, Inventory Section, Forest Management Bureau, Department of Natural Resources and Conservation, Missoula, Montana.
Dave Marsh	Management Forester, Clearwater Unit, Southwestern Land Office, Department of Natural Resources and Conservation, Greenough, Montana.
Mike McGrath	Wildlife Biologist, Southwestern Land Office, Department of Natural Resources and Conservation, Missoula, Montana.
Scott McLeod	Supervisor, Ecological Section, Forest Management Bureau, Department of Natural Resources and Conservation, Missoula, Montana.

Craig Nelson	Unit Forest Management Supervisor, Clearwater Unit, Southwestern Land Office, Department of Natural Resources and Conservation, Greenough, Montana.
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Donna Riebe	GIS Support, Inventory Section, Forest Management Bureau, Department of Natural Resources and Conservation, Missoula, Montana.
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Bob Storer	Manager, Forest & Lands Program, Southwestern Land Office, Department of Natural Resources and Conservation, Missoula, Montana.
Steve Wallace	Unit Manager, Clearwater Unit, Southwestern Land Office, Department of Natural Resources and Conservation, Greenough, Montana.
Will Wood	Right-of-way Acquisition Specialist, Southwestern Land Office, Department of Natural Resources and Conservation, Missoula, Montana.

From: Rennie, Patrick
Sent: Friday, October 04, 2002 2:10 PM
To: Wallace, Steve
Subject: Seeley Salvage II Timber Sale
Steve:

I have no indication that cultural resources will be effected with the proposed timber salvage. No additional archaeological investigative work is recommended before the sale proceeds.

Patrick Rennie
DNRC Archaeologist

11/20/02

To: Steve Wallace

Cc: Jon Hayes, Silviculturist
Gary Frank, Bureau
Jeff Collins, Soil Scientist
Mike T. McGrath, Wildlife Biologist

From: Renee Hanna, Hydrologist

RE: Draft Watershed, Fisheries, Weeds and Soils Report for Seeley Salvage II

Watersheds-Existing Conditions

The proposed Seeley Salvage II timber sale is located in section 36, of T17N R15W and sections 4,9,10,15 of T16N R15W. The proposed harvest areas are located in the watersheds of the Clearwater River, Morrell Creek, and an unnamed tributary of the Clearwater River (see watershed analysis area map). The Clearwater River is a Class I, large perennial tributary to the Blackfoot River. The Clearwater Watershed drains an area of approximately 33,150 acres and flows through sections 4,10 and 15 of the proposed project area.

The proposed project area in section 9 is located within the watershed of an unnamed tributary to the Clearwater River. The unnamed stream has a class II intermittent channel that flows adjacent to the harvest area in section 9. The proposed harvest area in section 9 varies from moderate to steeper slopes.

The proposed project area in section 36 is located in the Morrell creek watershed. Morrell Creek is a Class I perennial tributary to the Clearwater River. The proposed harvest area in section 36 is located on gentle slopes and broad terrace features. The proposed harvest area is adjacent to the stream channel, but is situated on a bench several hundred feet above Morrell Creek. The Clearwater River, Morrell Creek and the unnamed tributary have channels that are in stable condition and well vegetated.

Water Quality-Existing Conditions

The Clearwater River is classified B-1 in the Montana Surface Water Quality Standards. The B-1 classification is for waters that are considered suitable for domestic use after conventional treatment, as well as recreation, swimming and bathing. They are also suitable for growth and propagation of salmonid fish and other associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supplies. Another criteria for a B-1 classification is; no increases are allowed above naturally occurring concentrations of sediment, settleable solids, oils or floating solids, which will or are likely to create a nuisance or render the waters harmful, detrimental or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife. The Clearwater River was not identified as a water quality limited water body by the

1996 or 2000 update to the Montana 303(d) list. Downstream beneficial uses of the Clearwater River include: Irrigation, groundwater, stock, recreation, commercial, domestic, lawn and garden. Downstream beneficial uses for Morrell creek are irrigation, stock, recreation and domestic.

Past management activities in the proposed project area include timber harvest, grazing, road construction, recreation, fire suppression and urban development. Existing and potential impacts were evaluated due to cumulative watershed effects within the proposed project area. The cumulative watershed analysis area evaluated included Morrell creek from the NE corner of Section 25, T17 R15 to the confluence of the Clearwater River. It also included the Clearwater River from the outlet of Seeley Lake to the confluence of Morrell Creek. These areas were evaluated using a course filter approach. A fine filter approach was not used, because of the very low potential for cumulative impacts, in both the Morrell Creek and Clearwater River watersheds.

Road densities in the proposed project area range from moderate to high, 2.8-5.6 miles per section. Some roads in the project area do not fully comply with BMP standards. However, a detailed evaluation of roads within the project area was conducted and it was determined that sediment delivery from roads to the stream channel is not occurring at this time. There are no roads in the State section that run parallel to a stream channel. Stream crossings have a sufficient vegetative buffer, and that should minimize the amount of sediment that reaches the stream channel. The proposed sale area is currently accessed by county roads and lower standard roads, which are located within the harvest units.

Water Quality-Effects of Proposed Action

No Action Alternative

Under the No Action Alternative, existing substandard roads with inadequate drainage would not be improved and undersized culverts would not be replaced.

Action Alternative

Under the proposed action, no new road construction is planned; only existing roads will be used. All roads planned for use and occurring on State land within the proposed project area, were evaluated by a DNRC hydrologist. Some roads in the project area do not fully comply with BMP standards. These lower standard roads will be upgraded to meet BMP standards. Roadwork required to meet BMP standards will include; road ditch and culvert cleaning, culvert replacement, installation and maintenance of road surface drainage features, as well as placement of gravel in isolated areas. There is one stream crossing on an unnamed tributary to the Clearwater River in section 9, T16 R15 that will be replaced. The existing culvert is a native log culvert, which is partially plugged with debris and sediment, which is causing water to back up at the inlet and sediment to deposit. A new culvert will allow the stream channel to function properly and reduce sediment deposition at the inlet. The native culvert will be replaced with a culvert designed to meet a 50 yr flood event. New road drainage features will be installed as

needed to prevent road surface erosion. The Clearwater River and Morrell Creek are well buffered from any harvest units. The Streamside Management Zone Law and Rules will be followed on all streams and wetland areas.

The risk of direct, indirect and cumulative watershed impacts as a result of the proposed DNRC timber sale is very low. The amount of recent timber harvest within the analysis area is relatively low, and well below the levels normally associated with detrimental water yields increases. Seeley Salvage II involves the harvest of dead or bug hit lodgepole pine. This is due to a mountain pine beetle infestation. A large portion of the lodgepole pine in the harvest units is dead or dying. As a result, removal of these trees will have little or no effect on water yield, only slightly departing from natural conditions. There will be sufficient canopy cover remaining, consisting of live trees occupying the site, allowing for interception and infiltration, resulting in limited potential for increased water yields and off site delivery.

All wetland areas and stream channels including, perennial, intermittent and ephemeral draws, were evaluated by a DNRC hydrologist. These channels are stable and well vegetated. Harvest units that were determined to have soils with a high moisture content and increased potential for rutting, will be harvested in the winter during snow covered and/or frozen conditions. All other units may be harvested in the summer or fall.

Cold Water Fisheries-Existing Conditions

There are two fish bearing streams located in the proposed project area, the Clearwater River and Morrell Creek. The Montana Department of Fish, Wildlife and Parks surveyed fisheries populations on the Clearwater River. These surveys determined that brook trout, bull trout, westslope cutthroat and brown trout were present in the section of river located in the proposed project area. Both resident and fluvial/adfluvial populations of westslope cutthroat were found. Bull trout were considered to be primarily migratory. Surveys found brown trout, rainbow trout and brook trout to have both resident populations and fluvial/adfluvial populations.

Surveys taken in 1995 by Montana Department of Fish Wildlife and Parks on Morrell Creek, found brook trout, brown trout, rainbow trout, bull trout and westslope cutthroat. All species are considered to have resident and fluvial/adfluvial populations.

Under the Federal Endangered Species Act (ESA), bull trout are currently listed as a threatened species. The U.S. Fish and Wildlife Service have not developed a bull trout recovery plan. The Montana Bull Trout Restoration Team has developed guidance that is contained in the Montana Bull Trout Restoration Plan. The goal of the Montana Bull Trout Restoration Plan is to ensure the long-term persistence of complex (all life histories presented), interacting groups of bull trout distributed across the species range and manage for sufficient abundance within restored RCA's (Restoration/Conservation Areas) to allow for recreational utilization. .

West slope cutthroat (WCT) have been listed as a Class A State Species of Special Concern. This Class A designation indicates limited numbers and/or limited habitats both in Montana and elsewhere in North America. The DNRC entered into a Conservation Agreement as a collaborative and cooperative effort among resource agencies, conservation and industry organizations, resource users and private landowners to protect WCT populations. The basic goal of this effort is to protect existing populations and ensure the long-term persistence of WCT populations within their historic range in Montana.

Fisheries Habitat- Effects of Proposed Actions

No Action Alternative

The No Action Alternative would continue to risk impacts to cold-water fisheries through erosion and sedimentation due to existing road conditions and unimproved stream crossings.

Action Alternative

There is no harvest units located immediately adjacent to the Clearwater River or Morrell Creek. The harvest units in section 36, T17N R15W are located on a bench over 300 ft from the Morrell Creek. Best Management Practices (BMP's) and the Streamside Management Zone (SMZ) Law and rules will be implemented. Deferring harvest in the SMZ's and proposed road and stream crossing improvements are expected to result in no direct, indirect or cumulative impacts to cold-water fisheries habitat. This includes no reduction in large woody debris potential or stream shading and no increases in temperature or width depth ratios. No increases in sediment delivery are expected (see watershed section).

Soils-Existing Conditions

The sale area is located on several parcels with varied parent materials and soil types forming in glacial outwash, alluvium and residual soils. The units located near the Clearwater River flood plain and terraces in section 4, are classified as Aquic Udorthents, Aquic Udorthents are glacial outwash with very deep, somewhat poorly drained soils. The units in sections 9, 16 & 15 are a combination of Hollandlake-Bata Complex, Courville gravelly silt loam, Wildgen gravelly loam and Courville Mitten gravelly silt loams. All four soil types have Alpine till parent materials and are well drained, but can remain wet late into the spring. Harvest units in section 15 are classified as Udorthents-Glaciercreek complex. This soil type is excessively drained and has Alluvium, Glacial Outwash parent material. The sale area in section 36 is Andic Ustochrepts, glacial outwash substratum, which are excessively drained. These soils occur on flat outwash plains associated with major valleys and continental glaciation. These soils consist of deep, very gravelly loam. Annual timber production is moderate. Erosion hazard is low and sediment delivery efficiency is low.

Aquic Udorthents (map unit 5)- These soils consist of outwash deposits that are very gravelly and cobbly loams. They are located on upper level terraces with 0-2 percent

slopes and a mean annual precipitation of 21-23 inches. Soils tend to remain wet and have a limited season of use. They are somewhat poorly drained and have a very deep depth class of more than 60 inches. Annual production in forested areas is high. These soils favor tractor operations and mitigations should require deep snow or frozen ground to avoid compaction and displacement.

Wildgen gravelly loam (map unit 124)- These soils are formed in volcanic ash influence loess, underlain by thick deposits of glacial till and lacustrine sediments and are poorly drained. They occur on slopes of 4-30 percent and have a mean annual precipitation of 18-22 inches. Soil texture is a combination of gravelly loam and very gravelly loam. Depth class is very deep, more than 60 inches. Annual timber production in these soils is high. Due to potential compaction and rutting, mitigations should require deep snow or frozen ground and tractor harvest operations should be implemented.

Courville gravelly silt loams (map unit 31)- These soils occur on 0-30 percent slopes and consists if gravelly silt loams and very gravelly loams and are moderately drained. Mean annual precipitation is 25-35 inches with high annual timber production. Depth class is very deep, more than 60 inches. Compaction and displacement can be severe during wet periods. Tractor operation should be implemented; season of use should be limited to frozen ground or adequate snow cover and skid trails designated.

Hollandlake-Bata complex (map unit 54)- These soils occur on 30-60 percent slopes have an Alpine Till parent material, a surface texture of gravelly loam to gravelly silt loam, and are well drained. Higher elevations consist of a very gravelly clay loam. Annual timber production is high. Depth class is very deep; more than 60 inches and mean annual precipitation is 30-40 inches. Compaction and displacement can be severe when wet. In this section, tractor harvest operations on frozen or adequate snow covered ground should be implemented, to avoid soil displacement. Skid trails should be designated on steeper slopes.

Courville Mitten gravelly silt loams (map unit 32)- These soils occur on 30-60 percent slopes, have an Alpine till-Colluvium parent material, a surface texture of very gravelly sandy loam to extremely gravelly sandy loam, depending on elevation and are somewhat excessively drained. Depth class is very deep; more than 60 inches and mean annual precipitation is 25-35 inches. Displacement of surface ash should be avoided to maintain productivity. Winter or summer harvest would be suitable for this unit on slopes up to 45 percent.

Udorthents-Glaciercreek complex (map unit 112)- These soils occur on 0-8 percent slopes, have an Alluvium-Glacial outwash parent material, a surface texture of gravelly silt loam and are excessively drained. Annual timber production is moderate. Depth class is very deep; more than 60 inches and mean annual precipitation is 22-23 inches. Mitigation measures should be taken to avoid compaction and displacement.

Wildgen Winkler, cool, gravelly, loams (map unit 125)- These soils are located on 15-30 percent slopes, have Alpine till-Colluvium parent material with a surface texture of

very gravelly, sandy loam to extremely gravelly sandy loam and are somewhat excessively drained. Annual mean precipitation is 18-22 inches and the depth class is very deep, more than 60 inches. Compaction hazard is high for short periods when wet. It is well suited for tractor harvest, during dry or frozen ground.

Andic Usochrepts, glacial outwash substratum (map unit 73UA)- These soils are in glacial outwash plains associated with major valleys and continental glaciation, a surface texture of deep, very gravelly sandy loam and are excessively drained. They occur on slopes of 1-20 percent and have a mean annual precipitation of 25-35 inches. Erosion hazard is low and sediment delivery efficiency is low. Annual potential timber production is moderate. This site is well suited for tractor operation and is not season limited. Mitigation should be taken to avoid compaction and displacement.

Soil Interpretations					
Map Unit	Parent Material	Drainage Class	Erosion Hazard	Compaction Hazard	Notes
31 Courville gravelly silt loams	Loamy glacial till w/ volcanic ash surface	Moderate	Moderate	Severe if wet, OK if dry	Productive site
54 Hollandlake-Bata complex	Alpine till	Well	Moderate	Severe when wet	Main concern is to avoid soil displacement, designate skid trails on steeper slopes
124 Wildgen gravelly loam	Alpine till	Low to Moderate	Moderate	Moderate	Compaction hazard for short periods, when soils are wet
32 Courville Mitten gravelly silt loams	Alpine till-Colluvium	Well	High	Low	Avoid displacement of surface ash, key to productivity
112 Udorthents-Glaciercreek complex	Alluvium-Glacial Outwash	Somewhat Excessively	Moderate	Moderate	
5 Aquic Udorthents	Glacial Outwash	Somewhat poorly drained	High	High	Winter operations, to avoid compaction and displacement
73UA Andic Usochrepts, glacial outwash substratum	Glacial outwash	Excessively drained	Low	Low	
125 Wildgen, Winkler, cool, gravelly, loams	Glacial till and colluvium	Somewhat excessively drained	Moderate to high	Moderate	Compaction hazard for short periods when wet.

Soils-Effects of Proposed Action

No Action Alternative

Under the No Action Alternative, there would be no potential for soil compaction or displacement as a result of harvest activity.

The Action Alternative

There is a low risk of direct, indirect and cumulative impacts to long-term soil productivity resulting from the proposed action. The level of compaction, erosion and displacement of surface soils resulting from harvest and skidding equipment operations are expected to be minimal, based on implementation of recommendations of staff resource specialists. The project area is located on flat to moderate slopes. Cumulative effects could occur from repeated entries and overlapping effects in the harvest area. Implementing the following mitigation measures with the proposed entry presents low risk of cumulative effects to long-term soil productivity. Cumulative effects would be controlled by limiting the area of soil disturbance to less than 15% of harvest units through implementation of BMP's, skid trail planning on tractor units and limiting operations to dry or frozen conditions. Future harvest operations would likely use the same road system, skid trails and landings, to reduce additional cumulative effects. A DNRC hydrologist will assess the needs of all streams, draws and wet areas. The SMZ law and equipment restriction zones will be applied.

Harvest operation in Section 4, will occur in the vicinity of State cabin leases. As a result of the Beetle infestation, there is a higher level of fuel that has accumulated in this area of the project, making fuel reduction one of the primary objectives. Because of this need for fuel reduction, short-term decreases in the overall amount of coarse woody debris and fine litter available for nutrient cycling may be occurring. However, the overall effects to soil productivity are expected to be minimal. There are presently high levels of coarse woody debris on site, due to insect mortality and blow down. Adequate large woody debris and a majority of fine slash/needles would be retained for nutrient cycling to maintain long term productivity. In addition, the residual stand will provide for future recruitment of coarse woody debris.

Noxious Weeds-Existing Conditions

Existing Noxious Weeds

Noxious weeds, mainly knapweed (*Centaurea maculosa*) and spots of thistle (*Cirsium arvense*) occur within the project area. Knapweed and Oxeye Daisy (*Chrysanthemum leucanthemum* L.) occur as spot infestations on roadside edges within the State section. County roads have existing knapweed and Oxeye Daisy, which have not been treated in the area. Moist areas have more competitive vegetation and fewer weed occurrences. South slopes are droughty and at higher risk of weed establishment.

Effects of alternatives on noxious weeds

No Action Alternative

Under the No Action Alternative, noxious weeds would continue to spread along open and closed road systems.

Action Alternative

With no-action, noxious weeds, principally knapweed would continue to spread along existing roads and onto drier vegetation types, mainly south slopes.

With the proposed timber harvest action alternative for winter logging, ground disturbance would be minimal and the risk of weed introduction would be low. The action alternative objective for weed management is to prevent new establishment of noxious weeds and control established populations along open roads. For this project an Integrated Weed Management (IWM) approach would be implemented that would include: prevention, revegetation and weed control measures for spot outbreaks, which are considered the most effective weed management treatments. Short-term effect would be to reduce existing noxious weed populations and increase native plants and seeded grasses. Where weeds are replaced with grasses, erosion would be reduced due to the improved plant cover. Localized herbicide applications would be used, primarily along disturbed roadside edges and spot treatments of small infestations. To protect water quality, herbicide would not be applied where runoff could enter surface waters or riparian features.

Integrated Weed Management Mitigation's

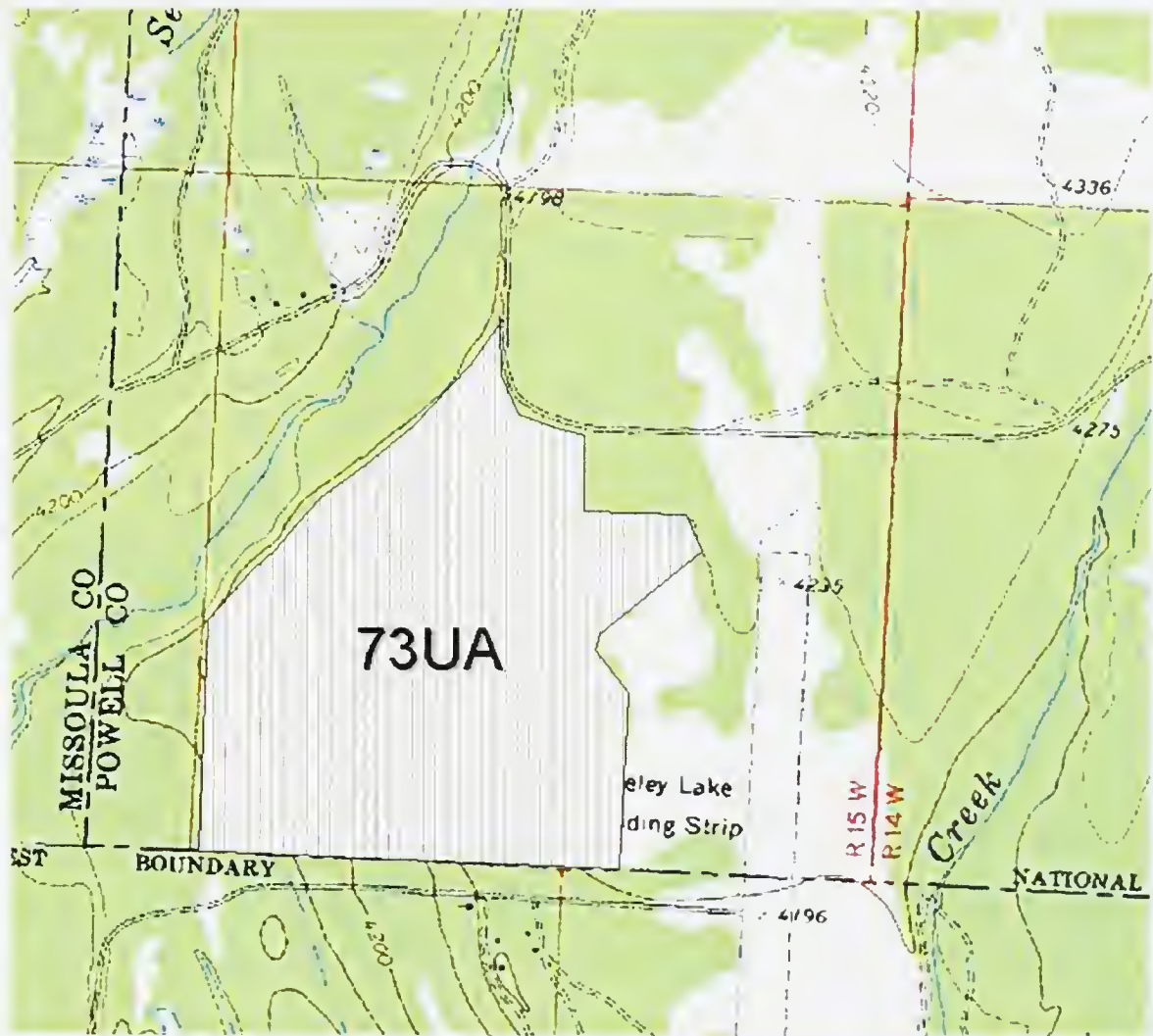
To reduce current noxious weed infestations and limit the spread of weeds the following integrated weed management mitigation measures of prevention and control will be implemented:

- * All road construction and harvest equipment will be cleaned of plant parts, mud and weed seed to prevent the introduction of noxious weeds. Equipment will be subject to inspection by forest officer prior to moving on site.
- * Promptly revegetate all newly disturbed soils on road cuts and fills with site-adapted grasses (including native species) to reduce weed encroachment and stabilize roads from erosion. For grass seeding to be effective it is important to complete seeding concurrent with road construction.
- * Weed treatment measures include herbicide applications along portions of project roads and accessible sites with a priority on spot outbreaks of noxious weeds and as designated by the Forest officer. Any restricted use herbicide treatments will be implemented by a certified applicator according to herbicide label directions in accordance with applicable laws and rules of Seeley Lake County Weed District.
- * DNRC will monitor the project area for two years. If new infestations of noxious weeds are noted, a weed management plan will be developed and implemented and coordinated with the lessee efforts.

Recommended Mitigation Measures

Forestry best Management Practices will be applied to all operations within the proposed timber sale area. This includes:

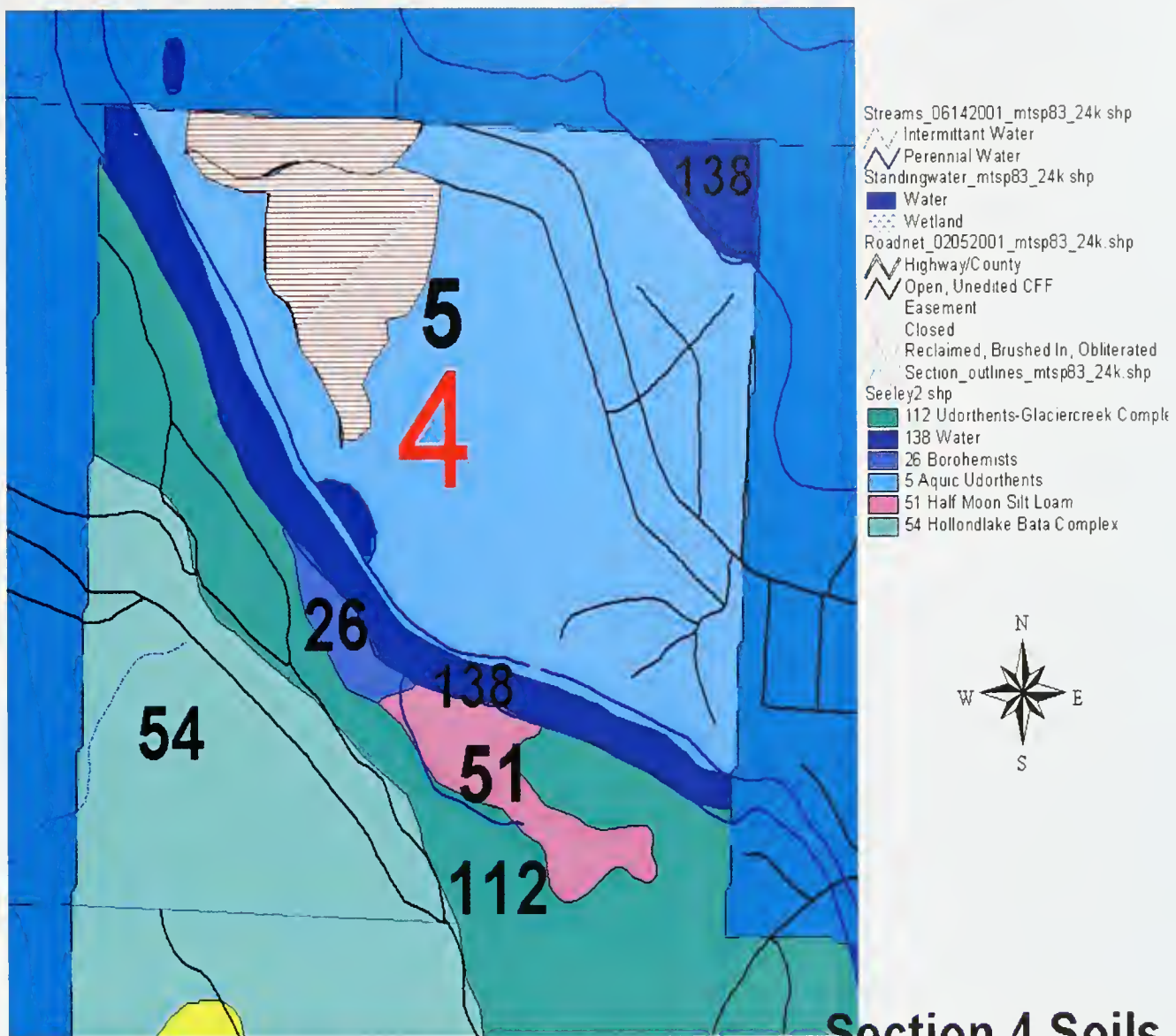
- Comply with Streamside Management Zone Law and Rules.
- Limit hauling to periods when roads are dry or frozen, and suspend hauling when conditions are wet, which could result in rutting and damage to drainage features.
- Timber harvest units will be designed to minimize overland flow, minimize soil erosion and displacement, and maintain water quality
- Log landings and skidding patterns will be designed to best fit the terrain and limit area affected.
- The period of operation on sensitive soils will be limited to winter activities (frozen ground and/or sufficient snow accumulation), when ground conditions are less susceptible to erosion, sedimentation and displacement.
- Existing roads will be inventoried and adequate drainage installed, to minimize water erosion and maintain water quality.
- Gravel will be selectively placed in areas where moist soils have caused rilling, rutting, or ponding of water on the road surface, based on site-specific review.
- On wet sites, steep slopes over 45%, complex terrain and along incised draws, equipment restriction zones will be located as needed to protect soils and wet sites from erosion.
- Retain 5-10 tons of coarse woody debris greater than 3" diameter on site following harvest for nutrient cycling.
- The native culvert in section 9 will be replaced to properly accommodate stream discharge, streambed load and debris to reduce road failure risk. Rock armoring will be installed around the inlet and outlet and a slash filter windrow will be built to provide a trap for any sediment running off the road.



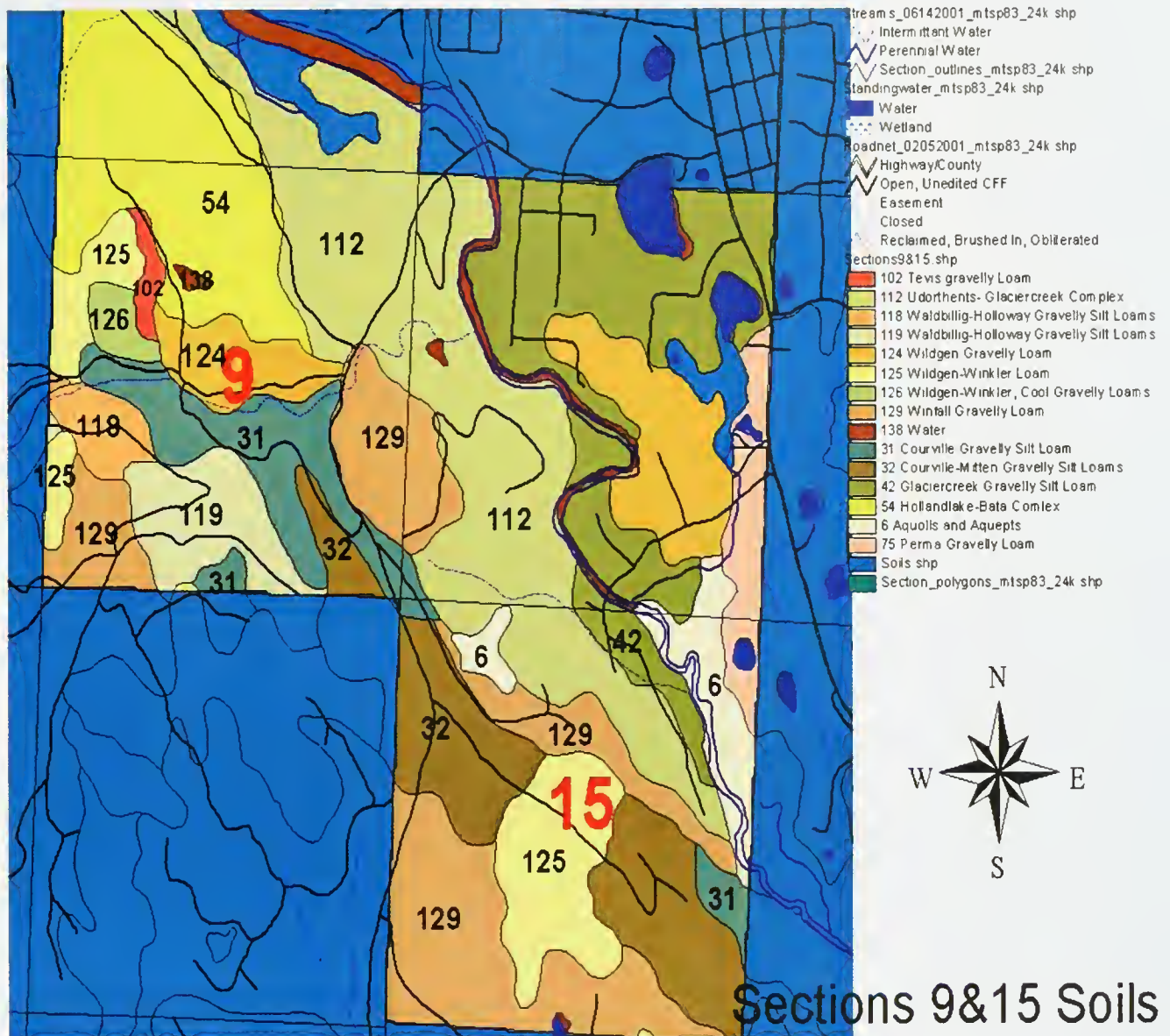
73UA Andic Usochrepts, glacial outwash substratum

Seeley II Soils Map
Section 36





Section 4 Soils



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November 12, 2002

Seeley Salvage II Wildlife Analysis

Analysis areas were developed to assess existing conditions, environmental consequences, and cumulative effects of the proposed action for threatened and endangered, sensitive, and big game species. The project area was defined as the sections in which the proposed actions would occur. Cumulative effects analysis areas were biologically defined for each species, and considered the effects of the following actions (Fig. 1):

From the DNRC

1. *Seeley Lake Salvage* (sections 4, 9, 10, and 15, T16N R15W)—the on-going action is salvaging lodgepole pine on approximately 250 acres to remove a mountain pine beetle infestation and leave ponderosa pine, western larch, Douglas-fir, and Englemann spruce, in accordance with the proposed harvest action in the Seeley Salvage II timber sale.
2. *Quiet Stems* (sections 32 and 34 T16N R15W, and section 36, T16N R16W)—the action used individual tree selection to remove diseased, dying and deformed trees, combined with commercial thinning, sanitation-salvage, shelterwood, and seed tree methods to reduce overstocking within the stands, and meet regeneration needs and reduce forest fragmentation on approximately 660 acres.
3. *Clearwater River* (sections 18, 19, 20, 29, 30, 31, and 32 T15N R14W, and section 36 T15N R15W)—the action used selective harvesting, favoring ponderosa pine and western larch as retention trees, to reduce overstocking, remove Douglas-fir, and reduce the presence of insects and forest diseases in the units on approximately 726 acres.
4. *Sour Fish* (sections 16, 20, 28, 32, and 34 T16N R14W)—the action produced a 142 acre stand replacing event simulation, while 490 acres emulated intermediate fire severity, removing lodgepole pine and many Douglas-fir, while retaining western larch and ponderosa pine.

From the Lolo National Forest

1. *Chain of Lakes Fuels* (sections 5, 6, 7, 21, 27, 28, 29, and 33 T17N R15W)—The U. S. Forest Service (USFS) has reduced the probability of fire damage to buildings adjacent to residences and administrative buildings by reducing fuel hazard and future fire intensity by removing middle and understory trees from selected stands, and by reducing fuel loading in areas of heavy ground concentrations on approximately 493 acres. Old growth and large diameter trees were not be removed.

Threatened and Endangered Species

Bald Eagle:

Issue: There is concern that timber harvesting could alter habitat conditions that would be detrimental to nesting bald eagles.

Affected Environment

Bald eagles are sensitive to a variety of human caused disturbances, ranging from residential activities to resource use and heavy equipment operation, among others

(Montana Bald Eagle Working Group 1994). Bald eagle response to such activities may range from spatial and temporal avoidance of disturbance activities to total reproductive failure and abandonment of breeding areas (MBEWG 1994). While foraging, they typically perch within 500 m of shoreline habitat (Mersmann 1989); and roost in trees ranging in diameter from 30 to 100 cm and 15 to 60 m in height (Stalmaster 1987) that are generally associated with aquatic foraging habitat. However, roost trees are located away from houses and roads throughout their range (Buehler 2000).

Known nest sites and nesting habitat: The bald eagle cumulative effects analysis area extends for 1.5 miles around Seeley, Placid, and Salmon lakes, encompassing 9,627 acres of DNRC land, 8,597 USFS acres, 14,739 Plum Creek Timber Company (PCTC) acres, and 8,715 private acres. Three known nesting pairs of bald eagles occur in the general area, with one nest site located within 4 km of the proposed harvest in section 4 of T16N R15W. Generally, nesting habitat potential for bald eagles on parcels with proposed activity in this section of the analysis area are low due to the abundance of cabin sites in the section. Due to the presence of the Seeley Lake Campground in section 33 of T17N R15W and additional cabin sites along the shoreline of Seeley Lake in sections 28 and 33 of T17N R15W, the likelihood of future nesting occurring in these sections is also low. However, because a portion (14 acres in the NW ¼ of the NW ¼) of the proposed harvest in Section 4 is within 4 km of an occupied nest, bald eagle foraging habitat must be maintained or enhanced (MBEWG 1994).

Environmental Effects

No Action Alternative

There is the possibility that once the mountain pine beetle has killed the lodgepole pine in the stand, it will infest the larger diameter ponderosa pine. A progression of this kind into the ponderosa pine, which comprises 1-80% of the stands, would likely create snags, and thus shorten the utility of such trees for potential nest or roost trees. Thus, no appreciable change from the current condition will be expected in the short term.

Action Alternative

Because the harvest plan calls for selective harvesting only lodgepole pine, large diameter trees for roosting and foraging, such as ponderosa pine, western larch, Douglas-fir, and Englemann spruce, will not be removed. Thus, snags and large emergent trees suitable for perching would not be reduced. Habitat attributes important for nesting and foraging eagles would not be altered appreciably. Mechanical disturbance from 15 November to 15 April could alter eagle use near the project area in section 4. However, the nearest disturbance would occur 2.4 miles away from a historically used eagle nest and would not be expected to influence nesting behavior or success.

Cumulative Effects

Portions of the proposed action, *Quiet Stems*, *Clearwater River*, *Sour Fish*, and *Chain of Lakes Fuels* occur within the 4 km radii of historic 3 bald eagle nests within the cumulative effects analysis area. Because these activities and proposed action are removing smaller diameter understory trees, such as lodgepole pine, and leaving the large diameter overstory

trees, potential nest and roost trees will not be removed. Additionally, these activities would not effect the density and distribution of bald eagle prey. Direct impacts associated with mechanical disturbance and indirect impacts associated with alterations in forest structure and habitat attributes would be minor and present minimal risk to bald eagles.

Mitigation for the Action Alternative

Leave large diameter ponderosa pine, western larch, Douglas-fir, and Englemann spruce for potential roosting and perch trees within 500 m of Seeley Lake and the Clearwater River in section 4 of T16N R15W. Should a bald eagle nest be found within the project area, cease all operations immediately, consult with a DNRC Biologist, and develop mitigations consistent with the Montana Bald Eagle Management Plan (MBEWG 1994).

Grizzly Bear:

Issue: There is concern that proposed timber harvest activities, such as road construction, disturbance, and cover removal may impact habitat and reduce security for grizzly bears.

Affected Environment

Grizzly bear are the largest terrestrial predators in North America, feasting upon deer, rodents, fish, roots and berries, as well as a wide assortment of vegetation (Hewitt and Robbins 1996). Depending upon climate, abundance of food, and cover distribution, home ranges for male grizzly bears in northwest Montana can range from 60 - 500 mi² (Waller and Mace 1997). Thus, the analysis area for grizzly bears is approximately 1000 mi², to compensate for unusual variances in climate and habitat, and is bounded by geographic features (Fig. 2). The cumulative effects analysis area encompasses 30,298 acres of DNRC land, 331,743 acres of land administered by the USFS, 194,811 acres of PCTC, 148,248 acres of Tribal land, 56,764 acres of private land, 12,819 acres of land administered by MFWP, 3,295 acres administered by the Montana University System, and 3,239 acres of BLM land.

The search for food drives grizzly bear movement, with bears moving from low elevations in spring to higher elevations in fall, as fruits ripen throughout the year. Bears are also very opportunistic feeders and will scavenge on human-provided foods, including garbage, bird seed, and pet food. The project area lies approximately 4 miles west of the Northern Continental Dived Ecosystem Recovery Area. Currently, habitats within the project area are known to be used by grizzly bears (Jamie Jonkel, MFWP, pers. comm. July 2002). Cover and road densities influence grizzly bear security and habitat use. Thus, manipulation of cover would likely influence bear use of resources near human habitations as well as provide security for the bear while utilizing "natural" resources in the area. Currently, there are 4.99 miles/mi² of total road (3.54 miles/mi² open; simple calculation) within the sections comprising the project area and a minimum of 2.62 miles/mi² of total road (simple calculation) within the sections included in the grizzly bear analysis area. Numerous cabin sites, private residences, businesses, an air strip, and Highway 83 also occur within the project area and cumulative effects analysis area.

Environmental Effects

No Action Alternative

With this alternative, routine stand inspections and road maintenance would continue, current open road densities would remain the same, and mountain pine beetle would continue to infest and kill lodgepole pine. Likely infestation of ponderosa pine would subsequently follow within the project area and possibly the cumulative effects analysis area. Within 5 years most lodgepole in the project area would either be dead or dying, and subsequently become downed wood within an additional 5 to 10 years. As a result of the dying lodgepole overstory, natural regeneration and growth of native forbs and berries would be stimulated. Thus, the visual screening cover lost to grizzly bear after the lodgepole pine have fallen will be replaced only after natural regeneration has become established and grown to a height of 10 - 15 feet (approximately 15 - 20 years). Because growth of native grasses and forbs would also be stimulated, forage, in the form of roots, tubers, berries would continue to be provided. Therefore, abundant natural food sources, minimal short term visual screening cover, and current open road densities would result from this alternative.

Action Alternative

With the action alternative, lodgepole pine would be removed to deter the mountain pine beetle infestation on 421 acres, western white pine and western larch would be planted to hasten forest regeneration, and an existing open road (0.58 miles) would be gated and locked to deter use of the site by the public. The proposed harvest would remove only live lodgepole pine and those that died within the past 2 years. Dense pockets (approximately 0.1 acre in area) of natural regeneration currently on site could potentially be damaged during harvest operations, in effect, removing some visual screening cover. The proposed action would: (1) retard the mountain pine beetle infestation sufficiently to prevent that spread of the infestation to larger diameter ponderosa pine found in the project area; (2) stimulate growth of native forbs and berries within the project area through removal of the lodgepole pine overstory; and (3) accelerate forest regeneration through planting of western white pine and western larch seedlings. As a result, (1) visual screening cover lost to grizzly bears after the lodgepole pine are harvested would be replaced when planted seedlings reach a height of 10 - 15 feet within 15 - 20 years of the proposed harvest; (2) open road densities would be reduced from 3.54 to 2.47 miles/mi² of open road within sections containing the project area; and (3) risk to grizzly bears would be minimized through minimizing (a) removal of visual screening cover, (b) harvest activities when bears are most likely to be present, and (c) minimizing access in areas that may offer some security.

Cumulative Effects

No Action Alternative

Under the no action alternative there are many on-going risk factors for grizzly bears within the project and cumulative effects analysis areas. Within the sections comprising the project area, there are currently 4.99 miles/mi² of total road (3.54 miles/mi² open; simple calculation), and a minimum of 2.62 miles/mi² of total road (simple calculation) within the

sections included in the cumulative effects analysis area. Additionally, there are numerous cabin sites, private residences, businesses, an air strip, and Highway 83 also occur within the project area and cumulative effects analysis area. In the short-term (within 20 - 25 years), no action would delay restitution of visual screening cover within the project area lost to the death of the lodgepole pine overstory, because planting of seedlings would not occur. In conjunction with the aforementioned timber harvests on nearby State and Federal lands, as well as intensive harvesting on industrial lands, there is a slightly increased potential for negative interactions with the surrounding human population. Due to the proximity of the project area to the town of Seeley Lake and adjoining cabin sites, human use of the area is of sufficient intensity that vegetative screens are valuable as buffers to bears from human habitations and use within the project and analysis areas. Trees dying through beetle-induced mortality and on-going timber harvest associated with the aforementioned timber sales on DNRC, USFS, and industrial timberlands, would reduce visual screening cover throughout the cumulative effects analysis area.

In the long-term (within 10 - 30 years), on-going timber harvests, would likely have positive benefits for grizzly bears because opening of the overstory will stimulate growth of native grasses and forbs to produce additional roots, tubers, and berries, all of which would maintain foraging habitat for native ungulates and provide potential food sources for grizzly bears. Under the no action alternative open road densities would remain at current levels, allowing motorized public access.

Action Alternative

Due to the close proximity to human habitations, Highway 83, previously mentioned timber sales, and local industrial timber harvesting within the cumulative effects analysis area, the temporary (15 to 20 years) loss of visual screening cover in portions of the project area may have a minor cumulative negative effect on grizzly bears. In conjunction with the aforementioned timber harvests on nearby State and Federal lands, as well as intensive harvesting on industrial lands, there is a slightly increased potential for negative interactions with the surrounding human population. Due to the proximity of the project area to the town of Seeley Lake and adjoining cabin sites, human use of the area is of sufficient intensity that vegetative screens are valuable as buffers to bears from human habitations and use within the project and cumulative effects analysis areas. Proposed mitigations may help alleviate the negative effects.

The proposed action would remove lodgepole pine from the overstory, thereby removing visual screening cover for grizzly bear from people traveling along roads and trails within the project area. Although the proposed action would plant western white pine and western larch seedlings to stimulate forest regeneration, there would be a 15 - 20 year lag before the regeneration reached sufficient height to provide visual screening cover for bears within the project area. The proposed action, in conjunction with the aforementioned timber sales, would reduce visual screening cover throughout the project area. In the long-term (within 5 - 25 years), this alternative, along with the aforementioned timber sales, would likely have positive benefits for grizzly bears because opening of the overstory will stimulate growth of natural food sources for grizzly bears. Additionally, under the proposed action, open road

densities would be reduced by 0.12 miles/mile² in the project area to further limit motorized public access into grizzly bear habitat.

Through implementation of mitigations: (1) direct disturbance would be minimized through seasonal restrictions on harvest activities; (2) open road densities within the project area would be reduced; (3) grizzly bear use of habitats near human habitations would be deterred through habitat alterations; (4) visual screening cover would be left unharvested along riparian areas and open roads within the project area; (5) pockets of hiding cover would be left within specific harvest units; and (6) re-establishment of visual screening cover would be accelerated through planting of seedlings.

Mitigation for the Action Alternative

- To minimize direct disturbance during the non-denning period and to minimize sanitation concerns, harvest would occur between November 15 and April 15.
- One open road would be gated and locked after the operation. Thus reducing the open road density by 0.12 miles/mile² to 3.42 miles/mile² in the project area.
- To deter grizzly bear use of habitats near human habitations:
 - A 200-foot wide strip would be cleared along the southern unit boundary in Section 36. This would also reduce fuel loads adjacent to houses.
 - Proposed harvest levels in units within Section 4 would remove all lodgepole pine to deter use of this populated area by grizzly bears.
- To minimize impact of the proposed action on grizzly bear, for the unit in Sections 9, 15, and 16:
 - Approximately 60 acres of riparian habitat would be left unharvested (Fig. 3).
 - Less than 30 acres of lodgepole pine would be harvested south of the aforementioned riparian mitigation zone, leaving the remaining habitat for visual and escape cover (Fig. 3).
 - North of the riparian mitigation zone, all pockets of non-lodgepole pine species would not be entered in order to provide visual screening, escape cover, and a travel corridor between the riparian mitigation zone and riparian areas in Section 4 (Fig. 3).
 - No harvest buffers would be placed within 66 feet of open roads in this unit to provide a visual screen (Fig. 3).
 - Western white pine and western larch seedlings will be planted throughout the unit, as well as within the roadside buffers, to provide for visual screening cover within 15 - 20 years, once the seedlings have achieved a height between 10 and 15 feet. We recognize that the predominant species within the roadside buffer is lodgepole pine. Consequently, these trees would likely become infested with mountain pine beetle, die, and fall to the ground within 10 years. Thus, seedlings would be planted within the buffer to provide for visual screening within this time period.

Gray Wolf:

Issue: There is concern that the proposed timber harvest may adversely impact wolves through reductions in security cover or alteration of habitat for prey species important for their survival.

Affected Environment

Wolves are currently classified as endangered in Montana under the Endangered Species Act. Due to the large territories of wolf packs (U.S. Fish and Wildlife Service 2002), the analysis area described for grizzly bears will also be used for this analysis. The Clearwater wolf pack occurs in the analysis area, however, no wolf den sites are currently known to exist within the project area (Ed Bangs, USFWS, pers. comm. June 2002). Cover and road densities likely have some influence on wolf security; however, prey densities and availability also influence wolf success. Fluctuations in deer and elk densities over time will likely have an effect on the presence or absence of wolves within the project and cumulative effects analysis areas.

Environmental Effects

No Action Alternative

Under this alternative, lodgepole pine, and possibly ponderosa pine, will likely die over several years as a result of the mountain pine beetle infestation. As a result, the forest overstory will gradually open over a period of years, stimulating vegetative growth and tree regeneration on the forest floor. The resulting new vegetative growth will likely provide forage for native ungulate populations, prospective prey for wolves. Additionally, screening cover currently provided by tree boles will persist until the pine snags eventually blow or fall over.

Action Alternative

No known wolf den sites occur within the project or cumulative effects analysis areas (Ed Bangs, USFWS, pers. comm. June 2002), and therefore, there would be no expected direct effects on denning wolves. However, wolves could move in and den within or near the project area at some later time. Some minimal and short-term indirect effects could result from potential displacement of potentially denning wolves as a result of logging disturbances resulting from implementation of the Action Alternative. In addition, short term reductions (approximately 10 – 15 years until regeneration develops) in screening cover, currently provided by tree boles, would be experienced as a result of removing the lodgepole pine in the proposed units. However, as a result of the proposed harvest, in the short term, vegetative response by understory forbs and shrubs to the harvest would be quick to produce palatable forage for deer and elk. No new roads would be constructed under the action alternative, and open road densities within the project area would be reduced by 0.12 miles/mile² to 3.42 miles/mile². Measurable reductions in security for wolves would not be expected.

Cumulative Effects

Due to the concentration of cabin sites and houses in and adjacent to several of the proposed harvest units, there is low potential for use of the project area by wolves. Additionally, the proposed action would not affect big game winter range habitat, but will serve to increase

summer forage quality over the next 10 years. Thus, cumulative effects of the proposed action alternative are minimal, and possibly slightly positive due to the positive effects on summer big game forage.

Mitigation for the Action Alternative

Suspend operations and temporarily restrict use of roads within a 1 mile radius of any known active wolf den until (1) the wolves have vacated the site, (2) a DNRC Biologist has approved re-commencing project activity, or (3) July 15, whichever occurs earlier. Project leaders would consult with the Wolf Recovery Coordinator to verify if new den locations have been established in the project area prior to initiating harvest activities in the spring/summer.

Suspend operations and consult a DNRC Biologist if a suspected rendezvous site is observed within 0.5 miles of any ongoing project activities.

Lynx:

Issue: There is concern that the proposed timber harvest could alter habitat or create disturbance that would be detrimental to lynx.

Affected Environment

Lynx are currently classified as threatened in Montana under the Endangered Species Act. In North America, lynx distribution and abundance is strongly correlated with snowshoe hares, their primary prey. Consequently, lynx foraging habitat follows the predominant snowshoe hare habitat, early- to mid-successional lodgepole pine, subalpine fir, and Engelmann spruce forest. For denning sites, the primary component appears to be large woody debris, in the form of either down logs or root wads (Koehler 1990, Mowat et al. 2000, Squires and Laurion 2000). These den sites may be located in regenerating stands that are >20 years post-disturbance, or in mature conifer stands (Koehler 1990, Ruediger et al. 2000). Of lynx that have been observed, 77% have occurred between 4000 and 7000 feet in elevation (McKelvey et al. 2000).

The cumulative effects analysis area (a 1-mile radius surrounding the project area) ranges between 4000 and 4900 feet in elevation, and contains several of the preferred vegetative habitats (subalpine fir/queencup beadlily, subalpine fir/dwarf huckleberry, subalpine fir/twinflower, and subalpine fir/beargrass), as well as some moist Douglas-fir and Englemann spruce habitat types that may contribute to lynx habitat (Ruediger et al. 2000). Additionally, surrounding lands within the analysis area contain habitat that may be conducive for snowshoe hares. Currently, lynx use of the cumulative effects analysis area has not been documented (John Squires, USFS, pers. comm. August 2002).

The project area is located near cabin sites, campgrounds, the town of Seeley Lake, and a state Highway. Because of these high disturbance levels, this area is probably not an area of intensive lynx use (Ruediger et al. 2000).

Environmental Effects

No Action Alternative

Under this alternative, lodgepole pine, and possibly ponderosa pine, will die over several years as a result of the mountain pine beetle infestation. Within ten to fifteen years of the lodgepole dying, it is likely to fall and become down logs or create root wads, and thus, potential denning habitat. Additionally, as a result of the opening overstory, vegetative growth and tree regeneration on the forest floor will be stimulated, potentially improving habitat conditions for use by snowshoe hares. The resulting new vegetative growth and dead pine could possibly become lynx habitat. However, due to the variety of various human disturbances (cabin sites, campgrounds, highway, and proximity to Seeley Lake), the project area is unlikely to receive intense use by lynx (Ruediger et al. 2000).

Action Alternative

Under the proposed action, only lodgepole pine would be removed from the harvest unit in order to subdue a mountain pine beetle infestation. As a result, trees that would normally die and fall to become down logs or create root wads (i.e., potential denning habitat attributes) would be minimized in the harvest units. Dense pockets (approximately 0.1 acre in area) of natural regeneration currently on site could potentially be damaged during harvest operations. Additionally, heavy equipment associated with harvest operations has the potential to increase the presence of exotic plants on site that can compete with native vegetation.

Section 36 of Township 17N Range 15W currently contains 41.5 acres of subalpine fir/queencup beadlily, dwarf huckleberry phase habitat along Morrell Creek, just north of the proposed harvest unit. This habitat type is preferred by lynx (Ruediger et al. 2000). While the proposed harvest unit does not contain lynx foraging habitat (as defined by Ruediger et al. 2000), it could theoretically provide denning habitat. However, snags currently exist within the proposed harvest unit in densities <1 per acre, down logs are generally <5 tons per acre, and are likely to remain so as a result of firewood cutters from houses <0.5 mile to the south. Therefore, the proposed action in this section has low potential to negatively impact lynx or their habitat due to the close proximity and influence of houses to the south and associated human use.

Within section 4 of Township 16N Range 15W, approximately 532 acres of lynx foraging habitat occurs, both outside and within the proposed harvest unit. The proposed action could likely result in damage to dense pockets (approximately 0.1 acre in area) of regeneration, which could impact snowshoe hare habitat. Otherwise, the proposed action would remove lodgepole pine from the overstory. Within the proposed harvest unit downed logs amount to approximately 10 – 15 tons per acre, primarily as single, large diameter (i.e., >15 inches, large end) logs. However, the proposed harvest unit also contains ≥ 10 cabin sites which would likely deter use of the site by lynx (Ruediger et al. 2000). Therefore, the proposed action in this section has low potential to negatively impact lynx due to the close proximity of cabin sites and associated human use.

Within section 9 of Township 16N Range 15W, approximately 341 acres of lynx foraging habitat occurs, both outside and within the proposed harvest unit. These acres of lynx foraging habitat would be retained with implementation of the grizzly bear mitigations.

Within section 15 of Township 16N Range 15W, approximately 17 acres of potential lynx foraging habitat occurs, consisting of the spruce/twinflower habitat type. This proposed harvest unit is approximately 0.8 mile (1300 m) from the nearest additional foraging habitat. The proposed action would remove lodgepole pine from the overstory and could damage pockets of regeneration/foraging habitat within the unit. Thus, there is potential for a minor negative impact to lynx due to the size of the unit in relation to the average home range size for female lynx in the Seeley-Swan Valley (approximately 17 mi²; Ruediger et al. 2000).

Cumulative Effects

No Action Alternative

Despite the 1375 acres treated on the nearby *Seeley Salvage I*, *Sour Fish*, and *Chain of Lakes Fuels* timber sales, which removed lodgepole pine that could potentially fall and become denning habitat, the no action alternative would likely provide a cumulative benefit for lynx within the cumulative effects analysis area (a 1-mile radius surrounding the project area). Through allowing the mountain pine beetle infestation to continue, most lodgepole pine will become infested, die, and fall to the ground within 10 - 15 years. The greater potential for jackstraw downed logs under this alternative would provide potential denning sites for lynx. Additionally, with the death of the lodgepole pine overstory, natural regeneration, most likely lodgepole pine, would follow within 5-10 years of the overstory's death. Thus improving habitat conditions for snowshoe hare, the primary prey for lynx.

Action Alternative

In conjunction with the 1375 acres treated on the nearby *Seeley Salvage I*, *Sour Fish*, and *Chain of Lakes Fuels* timber sales, the proposed action could likely provide a minor cumulative negative impact for lynx. All four actions have targeted lodgepole pine for removal. Lodgepole pine is a shallow-rooted tree that grows in uniform stands. When an event such as the mountain pine beetle infestation occurs, killing large portions of the stand, the resulting snags will fall to the ground within 5 - 10 years, with the possibility of jackstrawing occurring, which would provide potential lynx denning habitat. Through the proposed removal of live and recently dead (<2 years) lodgepole pine, this process would not be able to occur, preventing the creation of new lynx denning habitat, which is in short supply in the cumulative effects analysis area. However, with the removal of the lodgepole pine overstory, and subsequent planting of western white pine and western larch seedlings, natural lodgepole pine regeneration would also occur. Thus, ample snowshoe hare, and thus, foraging habitat, would be created. This would result in a benefit for lynx.

With the implementation of proposed mitigations in the project area, there would be: (1) potential for jackstrawing of downed logs to occur within a 60 acre reserve for potential denning habitat; and (2) an accelerated schedule for creation of early foraging habitat through planting of western white pine and western larch seedlings. Together, these

mitigations would potentially provide denning and foraging habitat in the cumulative effects analysis area where it is currently lacking.

Mitigation for the Action Alternative

- Within the unit in Sections 9, 15, and 16:
 - Approximately 60 acres of riparian habitat would be left intact, and less than 30 acres of lodgepole pine would be harvested south of the aforementioned riparian mitigation zone, leaving the remaining lodgepole pine to create potential denning habitat after it has died and fallen to the ground (Fig. 3).
 - North of the riparian mitigation zone, all pockets of non-lodgepole pine species would not be entered in order to provide a travel corridor of well-stocked mature forest between the riparian mitigation zone and riparian areas in Section 4 (Fig. 3).

Sensitive Species

Peregrine Falcon:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to peregrine falcons.

Affected Environment

Peregrine falcons were delisted from the Endangered Species list in 1999. However, due to the fact that the delisting occurred recently and they have specialized habitat needs, DNRC considers peregrines as a sensitive species. Peregrine falcons typically nest and perch on ledges and cliff faces. Additionally, a water source (e.g., river or lake) is usually close to the nest site, which is important for providing a localized and adequate prey base (Johnsgard 1990). Such foraging habitat is present in the Seeley Lake area. However, the closest known nesting habitat is approximately 16 miles away. The two closest known nesting pairs are located approximately 16 miles NW and 25 miles SW of the analysis area (Montana Natural Heritage Program, June 2002).

Environmental Effects

No Action Alternative

No change from the current situation would be expected should this alternative be selected.

Action Alternative

No direct or indirect effects on peregrines would be expected to occur as a result of this project. Harvesting is planned in forested areas where there is limited effect on peregrine falcon foraging habitat. Known active or potential peregrine nest sites are not located within 1 mile of any of the proposed harvest units and so harvest activities would not affect nesting or foraging habitat. Disturbance can be a concern during the nesting period (generally February 1 to July 15). However, both known nest sites are considerable distances from any proposed activity and so no disturbance would be expected to occur.

Cumulative Effects

No additional cumulative effects on peregrine falcons or their habitat would be expected to occur under the No Action or Action Alternatives considered for this project.

Mitigation for the Action Alternative

Avoid harvest activity within 800 meters of an active peregrine falcon nest from February 1 to July 15, should a nest be located.

Flammulated Owl:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to flammulated owls.

Affected Environment

The flammulated owl is a tiny forest owl that inhabits warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States and is a secondary cavity nester. It subsists primarily on insects and is considered a sensitive species in Montana. The cumulative effects analysis area (a 1-mile radius surrounding the project area) contains approximately 2,743 acres of primarily cool-dry Douglas-fir habitat types, ranging in basal area from 0 to 150 ft² acre⁻¹, on DNRC lands. Thus, some stands could potentially provide habitat for the flammulated owl.

Environmental Effects

No Action Alternative

Under the no action alternative, mountain pine beetle damage is likely to spread from lodgepole pine to ponderosa pine, resulting in the death of both pine species. Lodgepole pine is not a species in which flammulated owls are known to nest, however, larger diameter (dbh \geq 18 inches) ponderosa pine is preferred for nest trees (McCallum 1994). Thus, the no action alternative has potential to limit the abundance of potential nest trees over time. However, mountain pine beetle-induced mortality would also serve to decrease canopy closure and stocking within affected stands, thus increasing potential for use by flammulated owls. Thus, this alternative is likely to have a minor positive effect on flammulated owls because it would likely lead to the creation of large ponderosa pine snags (potential nest trees) and would likely decrease canopy closure.

Action Alternative

Under the proposed action, only lodgepole pine would be removed across 400 acres of potential flammulated owl habitat in the proposed harvest units. Such action would decrease canopy closure and stocking levels within the affected stands, whereby increasing the potential for use by flammulated owls. Removal of lodgepole pine should also reduce the potential for spread of mountain pine beetle to ponderosa pine. Thus, ponderosa pine, a preferred nesting tree, would be allowed to grow to larger diameters and be excavated by pileated woodpeckers and common flickers, the primary excavators of cavities most often used by flammulated owls (McCallum 1994).

Cumulative Effects

The proposed action alternative has a low potential to negatively effect flammulated owls. The proposed action would favor the retention of overstory ponderosa pine and western larch, while removing understory and mid-story trees, such as lodgepole pine. In effect, this action would be expected to have a positive effect on flammulated owls by opening the understory and retaining larger diameter preferred nest tree species.

Mitigation for the Action Alternative

Favor ponderosa pine and western larch in retention. Retain one large snag (>21 inches) and one recruitment snag (>21 inches dbh, or largest tree available if none >21 inches are present) per acre within harvest areas. Retain trees and snags within SMZs. Reduce where feasible road mileages and restrict public access to benefit snag retention efforts by reducing potential for loss of snags resulting from firewood cutting activity.

Boreal Owl:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to boreal owls.

Affected Environment

The boreal owl is a medium sized forest owl that occurs throughout much of the Rocky Mountains and Canada. In a regional survey of the northern Rocky Mountains, over 85% of boreal owl observations were located in stands on subalpine-fir habitat types, 76% were located in mature or older stands, and their calls were not heard below 4200 feet elevation (Hayward et al. 1993). When multistoried forest is not available, boreal owls can occasionally be located in lodgepole pine stands when they possess trees ≥ 15 inches dbh, and trees > 9 inches dbh that average 105 trees per acre (Hayward et al. 1993). Within the project area, eight stands, totaling 349 acres, have the potential to be suitable boreal owl habitat based on habitat type, average diameter, and elevation. Elevations on this project area range from 4,000 to 4,800 feet, which is in the range usable by boreal owls.

Environmental Effects

No Action Alternative

Under the no action alternative, mountain pine beetle damage is likely to spread from lodgepole pine to ponderosa pine, resulting in the death of both pine species. Reduction in canopy cover facilitated by the death of both lodgepole and ponderosa pine would likely decrease the suitability of the sites for both nesting and roosting habitat (Hayward et al. 1993). However, the no action alternative would likely foster the development of ponderosa pine snags, which would attract both pileated woodpeckers and northern flickers, who are the primary excavators of cavities used by boreal owls. Coupled with natural regeneration, the abundance of ponderosa pine snags would likely provide suitable boreal owl nesting habitat within 20 years.

Action Alternative

The proposed action would only remove lodgepole pine, leaving subalpine fir, western larch, ponderosa pine, and Douglas-fir in the harvest units. As a result, much of the forest canopy, as well as overall stand structure, would be retained, and the ponderosa pine and western larch would grow larger in diameter and likely attract cavity-making birds like the pileated woodpecker and northern flicker. All of which are desirable conditions for boreal owls. However, removal of lodgepole pine with intermediate crown positions in multi-species stands would alter the vertical structure of the stand, potentially causing such stands to be less suitable for boreal owls until natural regeneration can replace the lost vertical structure in 15 to 20 years.

Cumulative Effects

In combination with *Seeley Lake Salvage*, *Sour Fish*, and the USFS *Chain of Lakes Fuels* timber sales, the proposed action is likely to reduce the abundance of multi-layered spruce-fir forest stands within the analysis area for nesting, through removal of the intermediate lodgepole pine layer. Through removal of lodgepole pine to curtail a mountain pine beetle infestation, prey availability for flickers and pileated woodpeckers would be reduced, which in turn, would likely influence nest cavity availability. Woodpecker prey would be reduced directly through reduction in mountain pine beetles, and secondarily through removal of lodgepole pine that would die as a result of the infestation and subsequently house carpenter ants and other detritivores that would reside in the resulting snags and downed wood. At the scale of the analysis area, the proposed action alternative would reduce nesting habitat suitability for boreal owls until natural regeneration was able to grow into a suppressed or intermediate canopy layer in 20 to 25 years.

Mitigation for the Action Alternative

Lodgepole pine would be left within a 200 foot radius buffer of riparian areas within section 9 of T16N R15W. Such action would serve to retain multi-layered structure and act as a food source for pileated woodpeckers and northern flickers. As a result, pileated woodpeckers and northern flickers could create nesting cavities suitable for boreal owl use.

Black-backed Woodpecker:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to black-backed woodpeckers.

Affected Environment

The black-backed woodpecker is an irruptive species that forages opportunistically on outbreaks of wood boring beetles primarily in recently burned habitats, and to a lesser degree in unburned habitats. It is also considered to be a sensitive species in Montana. Although the black-backed woodpecker's nesting and foraging requirements are thought to be tightly linked with burned areas, it does nest and forage in unburned forest in response to insect outbreaks (Bull et al. 1986, Hutto 1995).

The cumulative effects analysis area (a 1-mile radius surrounding the project area) is currently experiencing an outbreak of mountain pine beetle, which serve as a potential food source for black-backed woodpeckers. While the analysis area does not contain recently

burned forest, the black-backed woodpecker's preferred habitat, the presence of the mountain pine beetle outbreak is likely to attract the species. This species is known to have nested within this portion of Missoula County since 1995 (Montana Natural Heritage Program 2001).

Environmental Effects

No Action Alternative

Under the no action alternative, the mountain pine beetle population would likely increase, and in so doing, would also increase the availability of ponderosa pine snags for nesting. The resulting increase in standing and fallen down wood would produce a greater risk for a stand replacing fire, should a fire ignite in the nearby area. Thus, preferred black-backed woodpecker habitat (i.e., burned forest stands) could become manifest under the no action alternative, provided the above series of events transpire. Otherwise, once black-backed woodpeckers colonized the analysis area, they would likely persist as long as the mountain pine beetle infestation continued. Such conditions could persist up to 15 years, depending upon the degree and extent of the infestation (Berryman 1986).

Action Alternative

The action alternative would remove the primary host of mountain pine beetle, lodgepole pine on 421 acres within the project area. This would effectively remove the primary food source for black-backed woodpeckers and minimize the potential for stand replacing fire within the project area through the removal of potential fuels. The action alternative would reduce the time period abundant mountain pine beetle populations would be available to black-backed woodpeckers.

Cumulative Effects

No Action Alternative

The no action alternative is likely to benefit black-backed woodpeckers to a minor degree because mountain pine beetles would persist as an abundant food source and create snags with potential for nest sites. Although unburned stands are not preferred habitat, such stands may serve as a source refuge for low numbers of black-backed woodpeckers waiting for the creation of newly burned forest (Hutto 1995). The no action alternative would likely offset some of the loss of habitat due to the reduction of middle and understory trees (presumably mountain pine beetle infested lodgepole pine) in the USFS *Chain of Lakes Fuels*, and the DNRC *Clearwater River, Seeley Salvage* and *Quiet Stems* timber sales. Additionally, the no action alternative would provide additional fuels for a future stand replacing fire that might create preferred black-backed woodpecker habitat.

Action Alternative

The action alternative, in combination with the USFS *Chain of Lakes Fuels*, and the DNRC *Clearwater River, Seeley Salvage* and *Quiet Stems* timber sales, would likely have a minor negative effect black-backed woodpeckers by removing trees that would serve as hosts for mountain pine beetles, and fuels for possible future stand replacing fires. However, the negative effects would probably not affect population levels, because insect infested, unburned habitat is not preferred habitat and may serve as sink habitat for individuals

(Hutto 1995). Hutto (1995) theorizes insect infested unburned habitat may serve as source habitat for the overall population because the habitat could sustain the population while it waits for creation of the more desirable, and more productive, burned forest. However, from the individual perspective, unburned habitat could serve as a “sink” because it may not contain sufficient resources to sustain the population, while birds emigrate, seeking burned stands to colonize.

The actions on State and USFS lands would have minor cumulative negative effects for black-backed woodpeckers through fuels reduction measures that would reduce the local risk for stand replacement fires. Such effects would thus reduce the likelihood that preferred habitat would be created within the analysis area.

Mitigation for the Action Alternative

Retain approximately 60 acres of mixed species forest, as well as scattered pockets of lodgepole throughout section 9. Such measures would allow for potential nest trees and a locally abundant population of mountain pine beetle.

Pileated Woodpecker:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to pileated woodpeckers.

Affected Environment

The pileated woodpecker is one of the largest woodpeckers in North America (15-19 inches in length), feeding primarily on carpenter ants (*Camponotus* spp.) and woodboring beetle larvae (Bull and Jackson 1995). The pileated woodpecker nests and roosts in larger diameter snags, typically in mature to old-growth forest stands (McClelland 1979, Bull et al. 1992). Due primarily to its large size, pileated woodpeckers require nest snags averaging 29 inches dbh, but has been known to nest in snags as small as 15 inches dbh in Montana (McClelland 1979). Pairs of pileated woodpeckers excavate 2-3 snags for potential nesting sites each year (Bull and Jackson 1995). Snags used for roosting are slightly smaller, averaging 27 inches dbh (Bull et al. 1992). Overall, McClelland (1979) found pileated woodpeckers to nest and roost primarily in western larch, ponderosa pine, and black cottonwood. The primary prey of pileated woodpeckers, carpenter ants, tend to prefer western larch logs with a large end diameter greater than 20 inches (Torgersen and Bull 1995). Thus, pileated woodpeckers generally prefer western larch and ponderosa pine snags > 15 inches dbh for nesting and roosting, and would likely feed on downed larch logs with a large end diameter greater than 20 inches.

Pileated woodpecker habitat does occur within the analysis area. Potential nesting and roosting sites are likely present due to the occurrence of western larch, ponderosa pine, and mature to late successional stands within the analysis area. An abundance of food currently occurs within the analysis area due to the irruption of bark beetles, in the form of mountain pine beetles. However, low numbers of snags are currently available due to considerable firewood cutting in close proximity to homes and cabin sites within and adjacent to the analysis area.

Environmental Effects

No Action Alternative

No action would permit the mountain pine beetle population to grow and create additional lodgepole pine snags, which within 5-10 years would become down woody debris. However, with firewood cutting in the area, pileated woodpeckers likely would not have the substrate upon which to forage in the future. The mountain pine beetle would likely infest ponderosa pine within the analysis area, creating potential nesting and roosting snags for pileated woodpeckers. However, the buildup of abundant down woody debris from beetle-killed lodgepole increases the risk of stands within the analysis area to stand-replacing wildfires. With the proximity of homes, cabin sites, and the town of Seeley Lake to the analysis area, large diameter snags and coarse woody debris are not likely to persist due to firewood cutting. Thus, this alternative would have low risk for negative effects to pileated woodpeckers.

Action Alternative

The proposed action would remove lodgepole pine from 421 acres infested with mountain pine beetle, or that has died within 2 years of implementation, while leaving ponderosa pine, western larch, and fir species. As a result, (1) an abundant food source, mountain pine beetle, would be reduced in the project area, (2) downed wood recruits from beetle-killed lodgepole would be limited to that which has been dead more than 2 years at the time the proposed actions would be implemented, and (3) larger diameter (>15 inches dbh) ponderosa pine snag recruits would likely grow larger in diameter because the threat of mountain pine beetle infestation would be reduced. Additionally, pileated woodpeckers would likely benefit through protection of older stands, which have an existing large diameter snag and tree component, from mountain pine beetle infestation. Thus, the proposed action would have low risk for negative effects to pileated woodpeckers.

Cumulative Effects

No Action Alternative

With respect to the USFS *Chain of Lakes Fuels* sale and DNRCs *Seeley Lake Salvage*, *Quiet Stems*, and *Sour Fish* timber sales, habitat under the no action alternative potentially would temporarily serve as source habitat for pileated woodpeckers in the analysis area due to the abundant supply of mountain pine beetles. No action in the proposed area would also allow mountain pine beetles to spread to residual ponderosa pine and mature forest stands in the surrounding analysis area, and *Chain of Lakes Fuels* and *Seeley Lake Salvage* units. This might have the negative effect of killing smaller diameter ponderosa pine (< 15 inches dbh) before it can grow to a size large enough to be utilized for nest and roost sites, as well as spreading mountain pine beetle to mature forest stands. Such action would be both a short-term benefit (20 to 30 years) and long-term detriment (>80 years) to pileated woodpeckers. By increasing the amount and distribution of downed wood in the analysis area, more foraging substrate would be available for pileated woodpeckers. However, this increase in fuels would also increase the analysis area's susceptibility to stand replacing fire. If a stand replacement fire occurred, it would have a negative effect on pileated woodpecker habitat quality, as home range size has been found to be inversely related with

canopy closure for this species (Renken and Wiggers 1989). This alternative has low risk for cumulative negative effects for pileated woodpeckers.

Action Alternative

Under the proposed action the availability of an abundant food supply, mountain pine beetles, would be reduced in the analysis area in conjunction with efforts on adjacent USFS and DNRC grounds. The locally irruptive outbreak of mountain pine beetles would normally spur localized increases in pileated woodpecker egg production and juvenile survival, after a one- to two-year lag in mountain pine beetle population increases. By reducing the pine beetle population through harvest of lodgepole pine, the proposed action would have low cumulative negative effect on the local pileated woodpecker pairs because the action would restrain the woodpecker population's increase in response to increasing food supply. However, the proposed action would also have cumulative positive effects for pileated woodpeckers because live ponderosa pine snag recruits would be allowed to grow to larger diameters for use as potential nest and roost sites, and the susceptibility of the analysis area to a stand replacing fire would be reduced with the removal of infested and recently dead lodgepole pine.

Mitigation for the Action Alternative

Approximately 60 acres of riparian-associated habitat would not be harvested within the section 9 harvest unit. As a result, a localized population of mountain pine beetle would be left in this pocket, which would allow for creation of lodgepole pine snags that would eventually become downed wood for pileated woodpecker feeding substrate.

Fisher:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to fishers.

Affected Environment

The fisher is a medium-sized animal belonging to the weasel family. Fishers prefer dense, lowland spruce-fir forests with high canopy closure, and avoid forests with little overhead cover and open areas (Coulter 1966, Clem 1977, Kelly 1977, Powell, 1977, 1978). For resting and denning, fishers typically use hollow trees, logs and stumps, brush piles, and holes in the ground (Coulter 1966, Powell 1977).

Environmental Effects

No Action Alternative

No action would involve gradual opening of the forest canopy as a result of the lodgepole pine overstory dying as a result of the mountain pine beetle infestation. Results of no action would leave an open overstory, which is inconsistent with fisher habitat preferences. However, the resulting lodgepole pine snags would fall, and become downed woody debris within 5 to 10 years time. The resulting logs would not be of sufficient diameter to provide suitable resting and denning sites for fishers. However, with the resulting openings in the canopy, natural regeneration would take hold and become potential foraging habitat within

10 years of the death of the overstory. Primary prey in the new foraging habitat would likely be snowshoe hare.

Action Alternative

The proposed action would remove lodgepole pine in 421 acres of potential fisher habitat that is infested with mountain pine beetle that has died within 2 years of implementation, while leaving ponderosa pine, western larch, and fir species. Results of the proposed action would leave an open overstory, which is inconsistent with fisher habitat preferences. However, within 10 years of the proposed action, natural regeneration would become established, providing habitat for snowshoe hare, and in turn, provide foraging habitat for fisher, as snowshoe hare are preferred prey. Because of the high potential for removal of snags and coarse woody debris by firewood cutters in the area, the action alternative poses low risk for negative effects to fisher.

Cumulative Effects

No Action Alternative

The USFS *Chain of Lakes Fuels* timber sale removed much of the middle and understory trees in stands adjoining DNRC lands, resulting in more open canopied stands which are not preferred habitat for fishers. No action on DNRC lands would result in the mountain pine beetle infestation killing lodgepole pine that would fall within 5 to 10 years and open the canopy, creating habitat conditions that fisher would likely avoid for resting and denning. In conjunction with open canopied forests on adjoining corporate timberlands within the analysis area, >75% of the analysis area would have open canopied forest (i.e., canopy closure $\leq 50\%$) within 5 to 10 years. With forest regeneration, much of the analysis area would provide foraging habitat for fisher in 10 to 15 years, with snowshoe hare likely being the primary prey. Thus, the no action alternative would have a moderate risk for long-term cumulative negative effect on fisher resting and denning habitat, but would have a positive cumulative effect on fisher foraging habitat.

Action Alternative

The USFS *Chain of Lakes Fuels* timber sale removed much of the middle and understory trees in stands adjoining DNRC lands, resulting in more open canopied stands which are not preferred habitat for fishers. The proposed action on DNRC lands would result in removal of lodgepole pine from the overstory, opening the canopy, and creating habitat conditions that fisher would likely avoid for resting and denning. In conjunction with open canopied forests on adjoining corporate timberlands within the analysis area, >75% of the analysis area would have open canopied forest (i.e., canopy closure $\leq 50\%$) within 5 years. With forest regeneration, much of the analysis area would provide foraging habitat for fisher in 10 to 15 years, with snowshoe hare likely being the primary prey. Thus, the proposed action alternative would have a moderate risk for low cumulative negative effects on fisher resting and denning habitat, but would have a positive cumulative effect on fisher foraging habitat.

Mitigation for the Action Alternative

Approximately 60 acres of riparian-associated habitat would not be harvested within the section 9 harvest unit. As a result, a localized population of mountain pine beetle would be left in this pocket, which would allow for creation of lodgepole pine snags that would eventually become downed wood that would provide additional cover for snowshoe hare after regeneration has been established. Thus, better habitat for prey would be established within a riparian corridor, which is more likely to be utilized by fisher (Jones and Garton 1994).

Other Sensitive Species Considered

The following is an additional list of sensitive species that are known to occur, or could occasionally occur on State Trust Lands administered by the Southwestern Land Office. Due to limitations of available habitat, these species were determined to have a low likelihood of being adversely effected by this proposal or are not likely to occur in the vicinity of the activities proposed by the Action Alternative. Species occurrence records provided by the Montana Natural Heritage Program Database were also acquired and reviewed to document the presence or absence of these sensitive species in the project area vicinity. No localized or cumulative impacts on any of these species are expected to occur as a result of this project.

Coeur d'Alene Salamander:

This species requires waterfall spray zones, talus, or cascading streams. There are no known areas of talus, waterfalls, or splash zones within the analysis area. No known occurrences within the analysis area. The alternatives considered would not effect Coeur d'Alene salamander habitat.

Common Loon:

The common loon is present in the analysis area, with loons breeding along the edge of an inlet at the north end of Seeley Lake. Migrants also use the lake in spring. Common loons are sensitive to disturbance during nesting. During incubation, the birds will often leave the nest if people approach (either on land or in boats) within 150 yards of the nest. While the adult is off the nest, the eggs are exposed to heating, cooling, and predators. If repeated disturbance keeps the loons off the nest for more than an hour, the pair would almost always abandon the nest. Additionally, loons are visual hunters, and clear water is essential for their success in an area. Turbidity resulting from eutrophication is a long-term threat to the loon's existence in the analysis area.

Because the proposed action would only occur during the winter months, which would minimize turbidity, and the nest is almost 2.4 miles from the closest point of proposed activity, negative impacts on common loons is expected to be low.

Harlequin Duck:

Harlequin ducks require white-water streams with boulder and cobble substrates. Such conditions do not exist within the analysis area. Thus it is unlikely that harlequin ducks would occur within the analysis area.

Mountain Plover:

Mountain plover require shortgrass prairie for nesting. These habitat conditions do not exist within the analysis area, and no known local populations occur here. Thus, no impacts to mountain plover would be expected to occur under the alternatives considered.

Townsend's Big-eared Bat:

Townsend's big-eared bats require caves, caverns, or old mines, habitat attributes that do not occur within the analysis area, for roosting. Thus, no impacts to this species would be expected to occur.

White-tailed Prairie Dog:

This species requires shortgrass, high elevation prairie, which is absent from the analysis area. There are no known local populations. Thus, no impacts to this species would be expected to occur.

Northern Bog Lemming:

The northern bog lemming requires sphagnum meadows, bogs, or fens with thick moss mats. Such habitat conditions and local populations do not exist within the analysis area. Thus, no impacts to this species would be expected to occur.

Columbian Sharp-tailed grouse:

No known populations of sharp-tailed grouse occur in the analysis area. Thus, no impacts to this species would be expected to occur.

Ferruginous Hawk:

Ferruginous hawks inhabit dry grassland, sagebrush plains, and saltbush/greasewood flats, which are absent from the analysis area. Additionally, no known populations of the species occur within the analysis area. Thus, no impacts to this species would be expected to occur.

Big Game Species

Mule Deer and White-tailed Deer:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to deer.

Affected Environment

Densely stocked thickets of conifer regeneration and overstocked mature stands provide thermal protection and hiding cover for deer in winter, which can reduce energy expenditures and stress associated with cold temperatures, wind, and human-caused disturbance. Areas with densely stocked mature trees are also important for snow interception, which makes travel and foraging less stressful for deer during periods when snow is deep. Dense stands that are well connected provide for animal movements across wintering areas during periods with deep snow, which improves their ability to find forage and shelter under varied environmental conditions. Thus, removing cover that is important for wintering deer through forest management activities can increase their energy expenditures and stress in winter. Reductions in cover could ultimately result in a reduction

in winter range carrying capacity and subsequent increases in winter mortality within local deer herds.

The cumulative effects analysis area (a 1-mile radius surrounding the project area) likely receives occasional winter use by both species. However, only white-tailed deer winter range conditions occur on 1,430 acres within the 15,641 acre cumulative effects analysis area, and outside of the project area. Within the cumulative effects analysis area, there are nearly 4,000 acres providing thermal cover (i.e., >70% canopy closure), with 1,596 acres of those acres inside of the project area.

Environmental Effects

No Action Alternative

Under this alternative, there would be a gradual opening of the forest canopy as a result of the lodgepole pine overstory dying as a result of the mountain pine beetle infestation. Results of no action would leave an open overstory, which is inconsistent with deer winter range preferences. As a result of the spreading mountain pine beetle infestation, there would be a decrease in thermal cover within the cumulative effects analysis area that would provide a decrease in the winter range's carrying capacity for deer. This would likely provide a moderate negative effect on both deer species.

Action Alternative

Under the proposed action, 421 acres of lodgepole pine would be removed in an effort to halt the mountain pine beetle infestation. While this would result in a net decrease in thermal cover within the cumulative effects analysis area, it could possibly prevent the infestation from spreading throughout this area, preventing further reduction in winter range carrying capacity. Thus, while the proposed action would likely provide a minor negative effect on deer winter range habitat through treatment of 421 acres, it could also provide a benefit to said habitat through reduction of possible spread of the mountain pine beetle infestation to currently unaffected habitat.

Cumulative Effects

No Action Alternative

In conjunction with the 250 acres in the *Seeley Salvage* timber sale, the gradual opening of the forest canopy resulting from the death of mountain pine beetle infested lodgepole pine, and its eventual spread throughout the cumulative effects analysis area would produce a moderately cumulative negative effect for both deer species. Results of no action would leave an open overstory, which is inconsistent with deer winter range preferences. As a result of the spreading mountain pine beetle infestation, there would likely be a decrease in thermal cover within the cumulative effects analysis area that would provide a decrease in the winter range's carrying capacity for deer.

Action Alternative

The 421 acre proposed action, in conjunction with the 250 acre *Seeley Salvage* timber sale would result in a net reduction of 678 acres of winter range habitat for deer within the

cumulative effects analysis area. However, these two actions combined would result in only a 17% reduction of thermal cover within the cumulative effects analysis area, while potentially curtailing the spread of a mountain pine beetle infestation, which would likely further reduce the amount of thermal cover. Thus, while the proposed action would likely provide a minor negative effect on deer winter range habitat through treatment of 421 acres, it could also provide a benefit to said habitat through reduction of possible spread of the mountain pine beetle infestation to currently unaffected habitat.

Mitigation for the Action Alternative

Mitigations include (1) retention of overstory cover provided by non-host trees, (2) in 60 acres of unharvested areas, riparian protection, and (3) reducing open road density within the project area by 0.12 miles/mile² to 3.42 miles/mile².

Elk:

Issue: There is concern that the proposed timber harvest may alter habitat or create disturbance that would be detrimental to elk.

Affected Environment

Densely stocked thickets of conifer regeneration and overstocked mature stands provide thermal protection and hiding cover for elk in winter, which can reduce energy expenditures and stress associated with cold temperatures, wind, and human-caused disturbance. Areas with densely stocked mature trees are also important for snow interception, which makes travel and foraging less stressful for deer during periods when snow is deep. Dense stands that are well connected provide for animal movements across wintering areas during periods with deep snow, which improves their ability to find forage and shelter under varied environmental conditions. Thus, removing cover that is important for wintering elk through forest management activities can increase their energy expenditures and stress in winter. Reductions in cover could ultimately result in a reduction in winter range carrying capacity and subsequent increases in winter mortality within local elk herds.

The cumulative effects analysis area (a 1-mile radius surrounding the project area) likely receives occasional winter use by elk. Only 1,592 acres of elk winter range conditions occur on within the 15,641 acre cumulative effects analysis area. Within the cumulative effects analysis area, there are nearly 4,000 acres providing thermal cover (i.e., >70% canopy closure), with 1,596 acres of those acres inside of the project area.

Environmental Effects

No Action Alternative

Under this alternative, there would be a gradual opening of the forest canopy as a result of the lodgepole pine overstory dying as a result of the mountain pine beetle infestation. Results of no action would leave an open overstory, which is inconsistent with elk winter range preferences. As a result of the spreading mountain pine beetle infestation, there would be a decrease in thermal cover within the cumulative effects analysis area that would provide a decrease in the winter range's carrying capacity for elk. This would likely provide a moderate negative effect for this species.

Action Alternative

Under the proposed action, 421 acres of lodgepole pine would be removed in an effort to halt the mountain pine beetle infestation. While this would result in a net decrease in thermal cover within the cumulative effects analysis area, it could possibly prevent the infestation from spreading throughout this area, preventing further reduction in winter range carrying capacity. Thus, while the proposed action would likely provide a minor negative effect on elk winter range habitat through treatment of 421 acres, it could also provide a benefit to said habitat through reduction of possible spread of the mountain pine beetle infestation to currently unaffected habitat.

Cumulative Effects

No Action Alternative

In conjunction with the 250 acres in the *Seeley Salvage* timber sale, the gradual opening of the forest canopy resulting from the death of mountain pine beetle infested lodgepole pine, and its eventual spread throughout the cumulative effects analysis area would produce a moderately cumulative negative effect for elk. Results of no action would leave an open overstory, which is inconsistent with elk winter range preferences. As a result of the spreading mountain pine beetle infestation, there would likely be a decrease in thermal cover within the cumulative effects analysis area that would provide a decrease in the winter range's carrying capacity for elk.

Action Alternative

The 421 acre proposed action, in conjunction with the 250 acre *Seeley Salvage* timber sale would result in a net reduction of 678 acres of winter range habitat for elk within the cumulative effects analysis area. However, these two actions combined would result in only a 17% reduction of thermal cover within the cumulative effects analysis area, while potentially curtailing the spread of a mountain pine beetle infestation, which would likely further reduce the amount of thermal cover. Thus, while the proposed action would likely provide a minor negative effect on elk winter range habitat through treatment of 421 acres, it could also provide a benefit to said habitat through reduction of possible spread of the mountain pine beetle infestation to currently unaffected habitat.

Mitigation for the Action Alternative

Mitigations include (1) retention of overstory cover provided by non-host trees, (2) in 60 acres of unharvested areas, riparian protection, and (3) reducing open road density within the project area by 0.12 miles/mile² to 3.42 miles/mile².

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-  Analysis Area
-  Project Area
-  Proposed Harvest Units

1 0 1 Miles



Figure 1. Location of the Seeley Salvage II harvest units, project area, and analysis area.

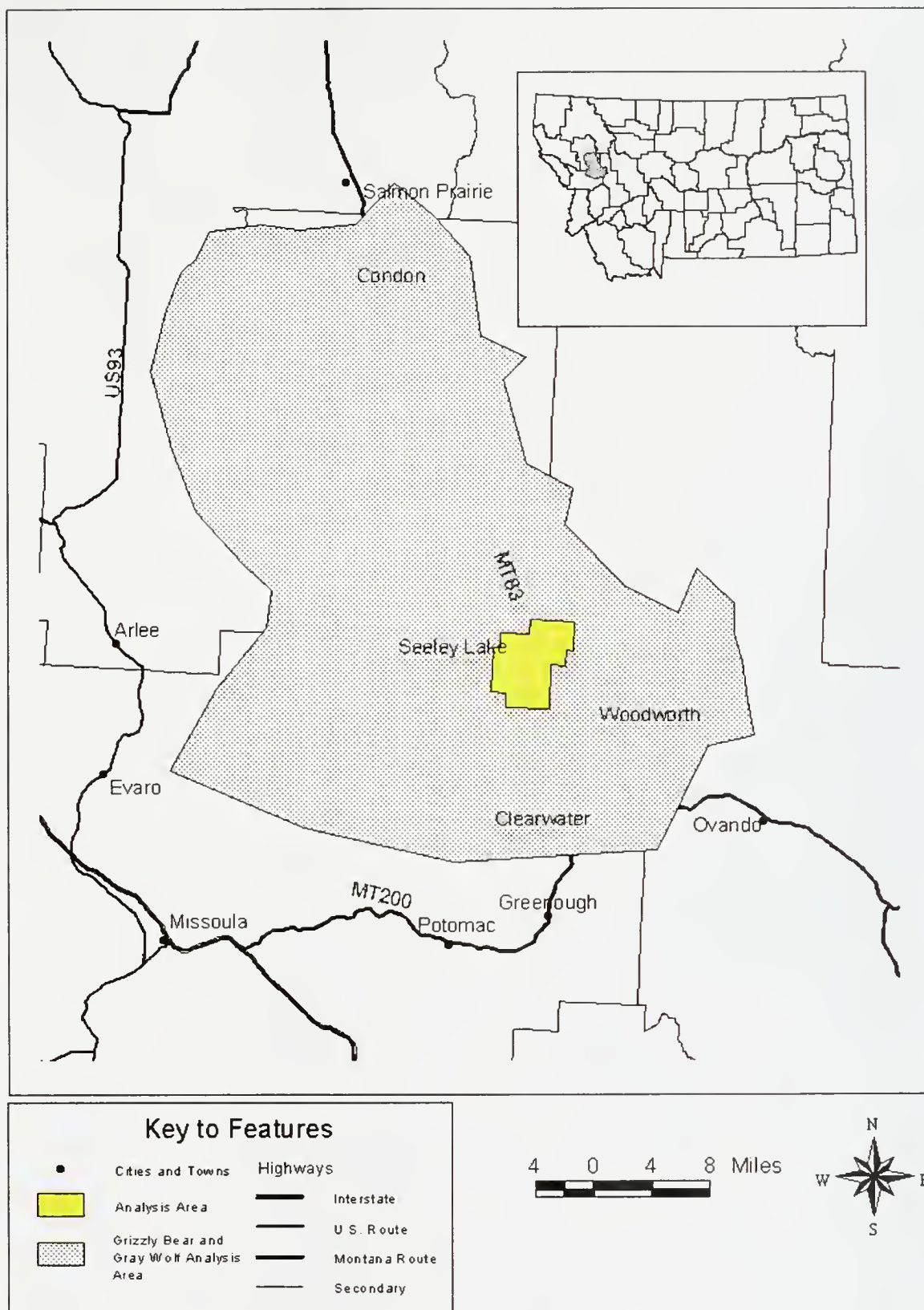
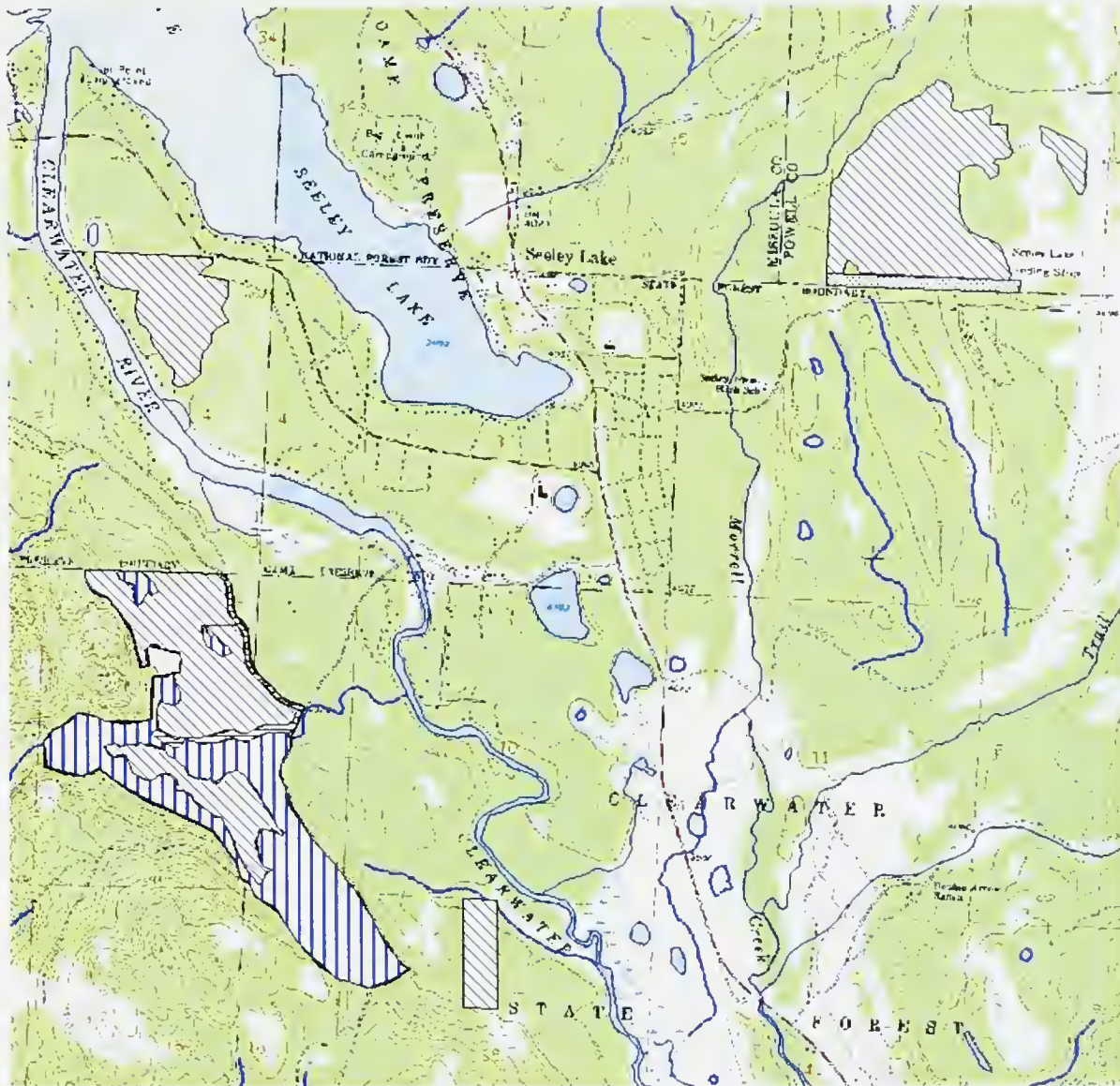


Figure 2. Grizzly bear and gray wolf analysis area



Key to Features

Streams	
	Intermittant Water
	Perennial Water
	Proposed Action
	Screening Cover
	Deter Bear Use
	Road Buffer



0.5 0 0.5 Miles

Figure 3. Mitigation units

October 1, 2001

949.9

**TO: Steve Wallace, Unit Manager, Clearwater Unit, SWLO, Montana
DNRC**

FROM: Steve Kohler, Forest Pest Management Specialist, Service Forestry Bureau,
Forestry Division, Montana DNRC

SUBJECT: Seeley Lake Salvage Timber Sale

In answer to your request, I have made a field visit to the proposed Seeley Lake Salvage Timber Sale. The visit was made September 13, 2001 with you and the wildlife biologist. We walked through stands affected by the current mountain pine beetle (*Dendroctonus ponderosae* Hopkins) outbreak and observed significant current and past beetle damage.

Following our field visit, you sent me copies of the timber cruise data for stands in sections 4 and 9 of the proposed sale area. I have used this cruise data to run an analysis using FINDIT (Forest Insect and Disease Tally System), a USDA Forest Service developed computer program for analysis of insect and disease population information taken from stand surveys.

Data is presented in detailed tables which show insect or disease related damage, surviving green stand and, in the case of mountain pine beetle, a loss prediction model which estimates trees per acre of lodgepole pine infested and killed by the beetle over a ten year period.

Tables for the two stands are attached. Data for remaining green stand is given for each tree species by diameter class in units of trees per acre (TA), basal area (BA) and board foot volume (BFV). Damage to the lodgepole pine component of each stand is also given in these same units.

Of the total board foot volume of the stand in section 4, approximately 53 percent is lodgepole pine. Of this lodgepole component, 60 percent of the board foot volume has already been killed in prior years or is currently infested. The loss prediction model shows that of a total of 125.34 trees per acre before the outbreak, only 18.30 will remain alive at the end of the outbreak.

Of the total board foot volume of the stand in section 9, approximately 83 percent is lodgepole pine. The outbreak in this stand is not as far advanced, but of the lodgepole component, 12 percent of the board foot volume has been killed in prior years or is currently infested. The loss prediction model shows that at the end of the outbreak there

will only be a total of 28.13 live lodgepole per acre, out of a total of 246.92 per before the outbreak began.

Your proposed treatment to remove most of the lodgepole pine through selective harvesting, leaving ponderosa pine, western larch, Engelmann spruce and Douglas-fir would virtually eliminate the risk of further mountain pine beetle damage in the treated stands. If currently infested lodgepole pines are removed from the treatment areas before beetle flight in July of 2002, the potential for subsequent damage to surrounding stands will also be significantly reduced because of lower beetle population levels.

Please let me know if you need any help in interpreting any of the FINDIT tables or if you need any more information.

(FINDIT tables are in the project file and may be reviewed upon request)

DESCRIPTIONS/PRESCRIPTIONS: SEELEY SALVAGE II

UNITS 9-1 & 9-2

These two units are located in Sec. 9, T16N, R15W, on gentle sloping ground with primarily east and northeast aspects. For the most part soils are well drained, however, a couple boggy areas occur in unit 9-1.

The overstory of these two stands are made up primarily of mature lodgepole pine (90-110 years old). Small amounts of Douglas-fir, western larch, ponderosa pine and spruce also occur in the overstory. Average diameter for lodgepole pine in both units is 9 inches and net volume/acre runs from 6 MBF in unit 9-2 to 9 MBF in unit 9-1. The main difference is unit 9-1 has a heavier stocking with approximately 218 tree/acres compared to unit 9-2 with 168 trees/acre.

All of this lodgepole pine is high risk for bark beetles with mountain pine beetles well established throughout these stands.

The plan is to convert these stands to more of a mixture of tree species, weighted to the more fire resistant western larch. All merchantable (tree with 5.5" top at 16') lodgepole pine will be removed and all other species will be retained. These units will then be planted with a mixture of western larch and western white pine.

UNIT 4-1

This unit is located in Sec. 4, T16N, R15W, on flat, sub-irrigated land, between Seeley Lake and where the Clearwater River outlets from Seeley Lake. The soil is silty and wet most of the year.

The overstory is large, very old (300-400) western larch with some Douglas-fir and lodgepole pine mixed in. The lodgepole pine has been decimated by mountain pine beetle with half the volume dead. The remaining 5 MBF/acre of merchantable lodgepole pine will succumb in the next 2-3 years.

The plan here is simply to remove the remaining lodgepole pine and manage the residual stand of old trees which has a volume of approximately 20 MBF for future opportunities. This stand is located between many cabin sites and summer homes and has a higher value to the trust as recreational property than timberland.

UNIT 15-1

This unit is very similar to Unit 9-1 in terms of volume, size and composition. It is located adjacent to Double Arrow Subdivision and I believe was left as a buffer when Champion International owned this land and logged it in the 1980's.

The mountain pine is well established on both the state land and private land. Much work has been done on the adjacent private lots to curb the spread of the beetle but to no avail.

My plan is to remove all lodgepole pine and plant western larch on this site. Because of its proximity to private home sites, 100% cleanup of logging slash and debris will occur in conjunction with the logging.

DESCRIPTIONS/PRESCRIPTIONS: SEELEY SALVAGE II**UNITS 36-1 & 36-2**

These two units are located near the Seeley Lake Airport on a very flat Sec. 36, T17N, R15W. Soils are gravelly, well drained glacial till.

The overstory is a mixture of lodgepole pine, with Douglas-fir and ponderosa pine mixed in. The overall age of this lodgepole is a little younger (80-90 years old) than what is found in many of stands around Seeley Lake. Because the average DBH of this stand is 10 inch, the bark beetles have begun their work a little early. This is a more open grown stand and in some cases these trees still have limbs the entire length of the bole. Approximately 6 MBF/acre on 117 trees/acre constitutes the volume in this stand.

The plan here is to remove all merchantable lodgepole pine and retain Douglas-fir and ponderosa pine. No planting will be necessary, however, thinning in the residual clumps of Douglas-fir will be required to reach the potential of future growth.

This area has been built around by the expanding town site of Seeley Lake and similar to section 4 has a higher and best use for non-timber management. Slash clean-up will be 100%.

